

REVIEW OF SOME GENERA OF THE
SUBFAMILY BRYOCORINAE
(HEMIPTERA : MIRIDAE)

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REVIEW OF SOME GENERA OF THE SUBFAMILY BRYOCORINAE (HEMIPTERA : MIRIDAE)

By THOMAS R. ODHIAMBO

SEVERAL lengthy accounts of the Bryocorinae have been given, of which perhaps mention should be made of those by Distant (1880-93, 1904, 1910), Knight (1923), and Poppius (1912, 1912a, 1915). Modern work really begins, however, with the revision of the Bryocorinae provided by China (1944). This outstanding work, although it was limited to the Bryocorinae of the Ethiopian Region, forms a basis from which revisions of single genera can profitably be reviewed—for instance, the many publications of Carvalho for the Neotropical Region particularly, and Schouteden for the Ethiopian Region only.

The great interest in the Bryocorinae is inspired not only because of the peculiar outgrowths and modifications of the external cuticular structure, found nowhere else in the Miridae to such an extent, but also on account of the inclusion of many species as serious pests of tea, cacao, coffee, cotton, and a number of other economic crops.

This work grew out of studies carried out in the British Museum (Natural History) during the summer of 1960, as a first step in a programme to revise the Miridae of the Ethiopian Region, which the author intends to pursue during the next few years. This is being done as a prelude to the investigation of the higher classification of the Miridae, and to the ecological studies of the family.

One of the problems which has been encountered in the present study is the extreme difficulty in using the structure of the male genitalia either for generic or for specific identification. In contrast to the situation in the tribe Halodapini (Odhiambo, 1959a), or in such genera as *Probosciodocoris* (Odhiambo, 1959) and *Cyrtopeltis* (Odhiambo, 1961) where the male genitalia can easily be used to characterize genera or species, the male genitalia in the Bryocorinae lack any obvious or easily appreciated differential characteristics. Hence, the heavy reliance on such characters as external cuticular structures, puncturation, and pubescence.

The material used for this study consisted of specimens in the British Museum, a few type-specimens sent on loan for study from European museums, material collected in West Africa and kindly sent to me by Dr. J. Carayon of the Paris Natural History Museum, a small collection from the Coryndon Memorial Museum in Kenya, and specimens collected by the Entomological Staff of the Kawanda Research Station in Uganda.

I should like to express my gratitude to the Trustees of the British Museum for granting me a vacation studentship for eight weeks to work in the Museum, to Dr. W. E. China who gave me invaluable advice and encouragement during my study, to Mr. R. J. Izzard who offered me laboratory facilities and arranged for types from European museums to be sent to me for study, and to Dr. M. S. K. Ghauri with whom I freely discussed many problems. Some preliminary work was done in October, 1958, while I was re-arranging the Mirid collection in the Coryndon Museum; I should like to thank Mr. R. H. Carcasson, curator of insects, for the pleasant time I had while working in his department.

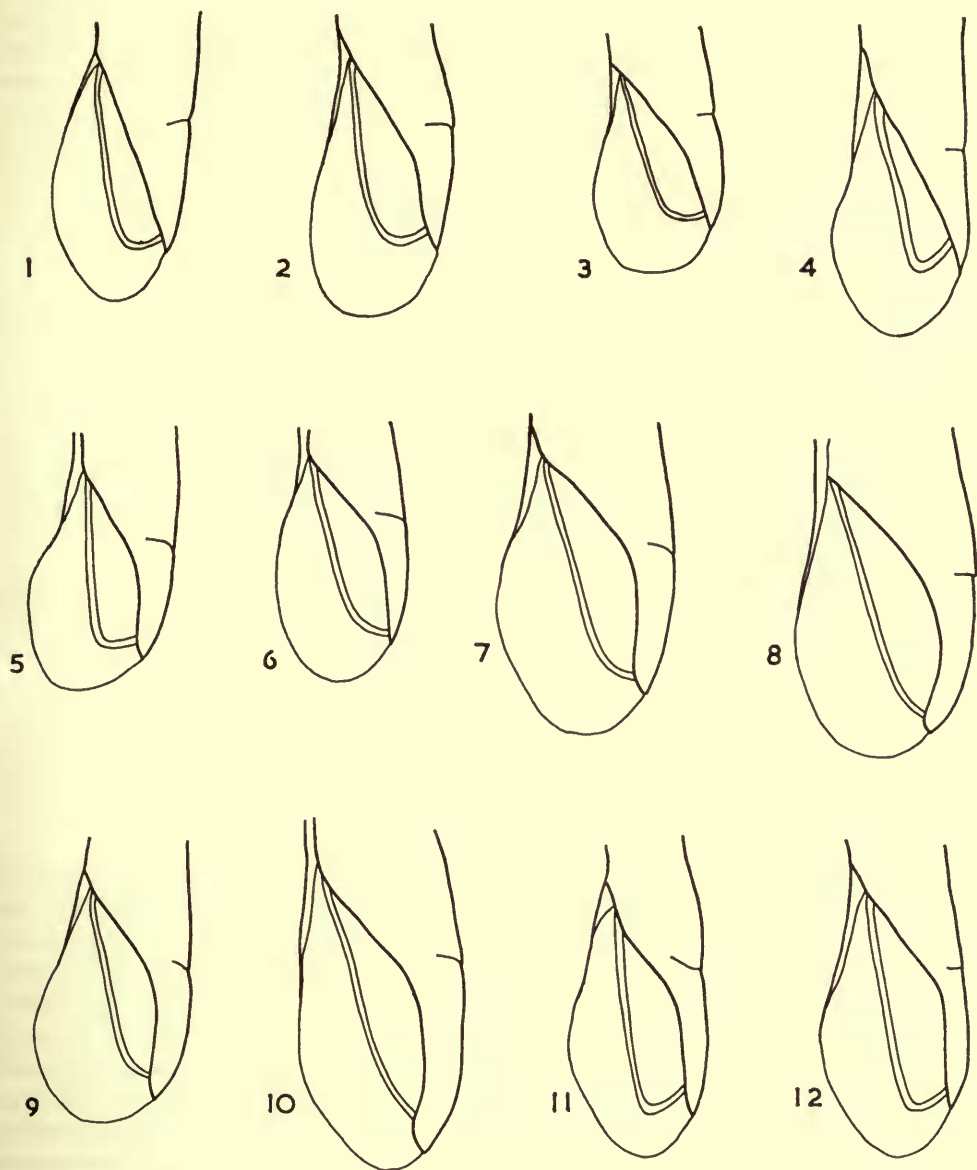
Tribe BRYOCORINI

Genera *PRODROMUS* and *SINERVUS*

In 1904 Distant described from Ceylon and Burma three new species (*subflavus*, *clypeatus*, *subviridis*) contained in *Prodromus*, a new genus he erected to receive them (Distant, 1904a : 436-437). In 1909 he described a fourth species, *P. cuneatus*, from Burma, which he re-described in 1910 (Distant, 1910). Poppius (1911) considered this last species to be so different from the other three as to warrant a distinct new genus—*Prodromopsis*. He further described four new species in *Prodromopsis* from the Pacific region (Poppius, 1912a, 1913, 1914a, 1915). But Carvalho (1948 : 191), in two brief paragraphs, decided that *Prodromopsis* Poppius, 1911, and *Sinervus* Stål, 1860, were synonymous, indicating that the male genitalia were similar (although no illustrations were given) ; and he therefore sank the genus *Prodromopsis*.

Poppius enumerated the following differences to distinguish *Prodromopsis* from *Prodromus* : (1) a vertical head, (2) a more swollen anteclypeus, (3) longer genae, (4) the structure of the antennae (the last segment of which is very long and thin), (5) the longer and narrower cuneus, as well as (6) shorter hairs on the body and legs. However, recent study by the author has revealed that the above characters are not valid at all, except perhaps the nature of the cuneus. Gradations are found in all these characters in both *Prodromus* and *Prodromopsis* ; and, even in the case of the cuneus, *cuneatus* has a long and narrow cuneus (Text-fig. 8), *subflavus* has a more or less triangular and broad cuneus (Text-fig. 2), and *subviridis* and *clypeatus* are intermediate between the two extremes (Text-figs. 6 and 7).

Consequently, the present writer has decided to transfer *cuneatus* back to *Prodromus* **sp. rev.** One other species at least, *philippinensis*, placed by Poppius in *Prodromopsis*, appears to belong to *Prodromus* ; but this and the other three species of Poppius will be left in *Sinervus* (= *Prodromopsis*) until the types have been examined. The only species which definitely belong to *Sinervus* are : *barensprungi* Stål, *costalimai* Carvalho, *discopiceus* Carvalho, and *hyalipedes* Carvalho—all Neotropical in distribution. The paratypes and male genitalia of *costalimai* and *hyalipedes* have been examined in the present study (Text-figs. 12a-18) ; and illustrations of external structure and male genitalia (including the original descriptions) of all four species undoubtedly show that the four species form a good and distinct genus.



FIGS. 1-12. Cuneus and curvature of membranal vein. 1, *Prodromus kawandanus* sp. n.; 2, *P. subflavus* Distant; 3, *P. thaliae* China; 4, *P. melanonotus* Carvalho; 5, *P. flavonotus* sp. n.; 6, *P. subviridis* Distant; 7, *P. clypeatus* Distant; 8, *P. cuneatus* Distant; 9, *P. cochinensis* sp. n.; 10, *P. pedunculus* sp. n.; 11, *Sinervus costalimai* Carvalho; 12, *S. hyalipedes* Carvalho.

Apart from the structure of the male genitalia, *Prodromus* and *Sinervus* may be separated as follows :

Prodromus

1. Head : transverse, less than twice as wide as long ; as wide as posterior margin of anterior lobe of pronotum, or a little wider
2. Frons : swollen (in a blunt way)
3. Antennal sclerites : minute ; about one-quarter or so as long as antennal segment I is thick
4. Pronotum : not forming a distinct " neck " or " waist ", without a transverse row of punctures between anterior and posterior lobes
Calli separated from each other medially by a depression
Anterior margin of anterior lobe much narrower than posterior margin of the same
5. Pronotal collar : anterior margin curved (i.e. concave)
6. Anterior acetabula : invisible from above
7. Hemelytra : with dense sub-erect hairs ; densely minutely punctured, somewhat shiny and translucent or opaque

Sinervus

- . Very wide, $2\frac{1}{2}$ times as wide as long ; nearly twice as wide as posterior margin of anterior lobe of pronotum, and about as wide as middle of posterior lobe of pronotum.
- . Concave in front (as seen from above).
- . Prominent ; as long as antennal segment I is thick.
- . Anterior lobe very narrow, separated from posterior lobe by a transverse row of punctures.
- . Calli confluent.
- . Anterior margin of anterior lobe only slightly narrower than posterior margin.
- . Straight.
- . Very distinct.
- . Sub-glabrous, with very sparse hairs ; smooth (i.e. unpunctured), very shiny and transparent.

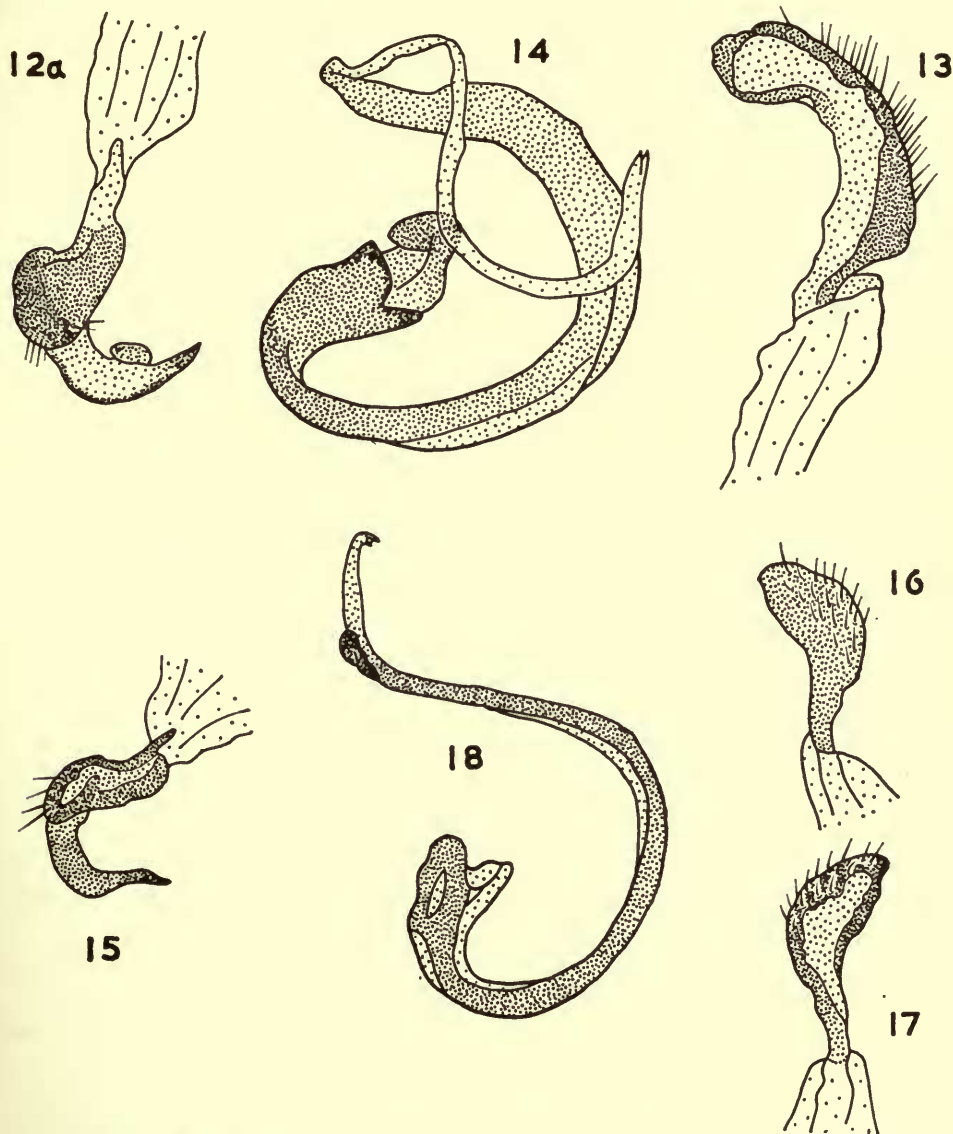
PRODROMUS Distant

1904a. *Prodromus* Distant, *Faun. Brit. Ind., Rhynchota*, 2 : 436.

1912. *Prodromus* Distant ; Poppius, *Acta Soc. Sci. fenn.* 41 (3) : 196.

RE-DESCRIPTION. General shape elongate, more or less distinctly widened at the sides ; body shortly hairy, the hairs being shiny white. Head smooth, shiny, with erect or sub-erect hairs ; vertical, transverse, about $1\frac{1}{2}$ times as wide as long, and at least as wide as posterior margin of anterior pronotal lobe ; posteriorly narrowed to a short neck. Vertex depressed, medially with a very fine longitudinal sulcus. Frons bluntly swollen from above. Anteclypeus more or less strongly inflated ; separated from frons by a transverse impression. Eyes sub-stylate, strongly prominent, from above kidney-shaped, from the side with lower margin curved or sinuate ; occupying only one-third of height of head. Rostrum usually extending beyond fore coxae. Antennae thin, very densely hairy ; segment I with at least basal one-quarter narrowed, segments III and IV very thin, segment IV the longest, segments II to IV linear. Pronotum coarsely and very densely (almost reticulately) punctate, punctures on calli and collar sometimes less distinct ; posterior margin broadly emarginate, anterior margin concavely curved away from head ; posterior lobe convex and tumid, anterior lobe flattened. Calli distinct, large, reaching lateral margin of pronotum, feebly elevated, separated from each other by a median depression.

Collar thick, much thicker than antennal segment I; feebly swollen. Scutellum more or less equilateral, flattened, smooth, shiny, with some sub-erect hairs. Hemelytra translucent or opaque, more or less distinctly widened laterally, densely regularly covered with sub-erect hairs and irregularly so with fine punctures; embolium equally wide throughout, delimited by a row of almost confluent punctures;



FIGS. 12a-18. Male genitalia; 12a-14 of *Sinervus costalimai* Carvalho, 15-18 of *S. hyalipedes* Carvalho. 12a and 15, left paramere; 13, 16 and 17, right paramere; 14 and 18, aedeagus.

cuneus long, sub-triangular, or narrow and with the inner margin curved ; membranul vein with minute hairs, vein terminating very near apex of cuneus. Legs moderately long, very densely shortly hairy, hairs along posterior aspect of femora long. Type-species : *Prodromus subflavus* Distant.

This genus is distributed through the Ethiopian Region (West and East Africa, and the Congo), Ceylon, and Lower Burma. Material in the British Museum (Nat. Hist.), and that collected by the author in Uganda, has revealed four new species, and extended the distribution to include Malaya and Dutch New Guinea.

The key provided below for the separation of *Prodromus* species does not include *P. alboviridescens* (Motschulsky), 1863, whose identity is in considerable doubt. Bergroth (1917, *Rev. Russe d'Ent.* 17: 108) transferred this species from *Leptomerocoris* to *Prodromus*, and also noted that the type was lost. Distant (1904: 487) reproduced the original description without comment, except that he was unable to recognize the species. From such passages as "tibiae nude" and "pronotum . . . anteriorly glabrous" it appears that the description was based on a damaged specimen. At any rate the description is quite unsatisfactory for the recognition of the nominal species.

KEY TO SPECIES OF *Prodromus*

1. Eyes pedunculate, eye peduncle nearly as long as an eye is wide ; antennal segment I about twice as long as median length of head, basal half slender ; pronotum across humeral angles three times as wide as across pronotal collar ; apex of cuneus falling short of apex of membrane by only one-fifth length of head. Rostrum extends to precoxae. (Dutch New Guinea) ***P. pedunculus*** sp. n.
- Eyes at most sub-stylate, eye peduncle at most two-thirds as long as an eye is wide ; antennal segment I at most $1\frac{1}{2}$ times as long as median length of head, less than basal half slender ; pronotum across humeral angles less than three times as wide as across pronotal collar ; apex of cuneus falling short of that of membrane by at least one-third length of head 2
2. Pronotum and/or scutellum largely brown or fuscous ; venter at least with fuscous markings, if pale entirely then antennal segment I longer than head 3
- Dorsum pale in colour ; venter pale, at most with apex of abdomen fuscous 6
3. Venter pale, stramineous ; on dorsum only scutellum dark, fuscous ; antennal segment II pale, with apical one-quarter reddish ; antennal segment III three times as long as segment I. Cuneus with inner margin curved. Rostrum reaching middle of mesocoxae. (Lower Burma, Malaya) ***P. clypeatus*** Distant
- Venter with fuscous markings on thorax at least ; pronotum, scutellum, and hemelytra with extensive dark markings ; antennal segment II fuscous ; antennal segment III at most $2\frac{1}{2}$ times as long as segment I 4
4. Head orange, anteclypeus darker ; antennal segment I pale in colour. (Senegal) ***P. nimbus*** Delattre
- Head brown or black, anteclypeus sometimes flavescent ; antennal segment I with with extensive brownish markings. Rostrum extends to apices of fore coxae 5
5. Antennae inserted near middle of eyes ; antennal segment I about $1\frac{1}{2}$ times as long as head, basal two-fifths slender ; antennal segments II and III equal in length ; inner margin of cuneus straight, membranul vein forming a right angle at apex ; inner margin of cuneus broadly fuscous and membranul vein fuscous. (Ghana, Cameroons, Congo) ***P. melanonotus*** Carvalho

- Antennae inserted at lower margin of eyes ; antennal segment I $1\frac{1}{2}$ times as long as head, only basal one-third slender ; antennal segment III distinctly longer than segment II ; inner margin of cuneus a little curved, membranar vein broadly rounded ; cuneus and membranar vein pale throughout. (Ghana) *P. flavonotus* sp. n.
- 6. Antennae fuscous, segment I pale at base and sometimes tinted with orange at apex, segment II sometimes pale brown at base ; rostrum not reaching mesocoxae 7
- Antennae with reddish markings, at least on segments II and III, segments I and II largely in colour ; rostrum reaches bases of mesocoxae, or, if not, then antennal segments I and II red 8
- 7. Antennal segment II slightly less than $1\frac{1}{2}$ times as long as segment I ; antennal segment I suffused with red at apex ; head brown. (Senegal) . *P. joveri* Delattre
- Antennal segment II slightly more than twice as long as segment I ; antennal segment I infusate apically ; head greenish-white. Hemelytra almost linear at the sides. (Ghana) *P. thaliae* China
- 8. Antennal segment II about as long as pronotum ; segment III much shorter than segment II. (Kenya) *P. aethiopicus* Poppius
- Antennal segment II much longer than pronotum ; segment III at least about as long as segment II 9
- 9. Cuneus triangular in shape, only twice as long as broad, inner margin linear, apex falls short of membranar apex by a distance equal to length of head ; membranar cell broadly rounded at apex or almost rectangular. Antennal segment I about as long as head 10
- Cuneus long and narrow, at least three times as long as broad, inner margin curved, apex falls short of membranar apex by a distance equal to at most two-thirds length of head ; membranar vein slightly curved at apex 11
- 10. Lower margin of antennal sclerites below lower margin of eyes, the former narrowly separated from eyes ; antennal segment I and II reddish, base of segment I pale in colour ; dorsum bright green, claval commissures brownish. (Uganda) *P. kawandanus* sp. n.
- Lower margin of antennal sclerites above lower margin of eyes, antennae separated from eyes by a distance equal to thickness of basal portion of segment I ; antennal segment I stramineous, segment III with base and apex red ; dorsum ochraceous, corium and cuneus stramineous. (Ceylon) *P. subflavus* Distant
- 11. Antennal segment II twice as long as segment I, the latter longer than head ; segment II with only apical one-quarter reddish 12
- Antennal segment II distinctly more than twice as long as segment I, the latter about as long as head ; segment II with base and apex broadly reddish-brown. (Ceylon) *P. cuneatus* Distant
- 12. Antennal segment III much longer than segment II ; head and thorax dorsally largely ochraceous ; pronotum $1\frac{1}{2}$ times as broad as long. (Cochin China) *P. cochinensis* sp. n.
- Antennal segment III about as long as segment II ; head and thorax dorsally stramineous ; pronotum $1\frac{1}{2}$ times (or less) as broad as long. (Lower Burma) *P. subviridis* Distant

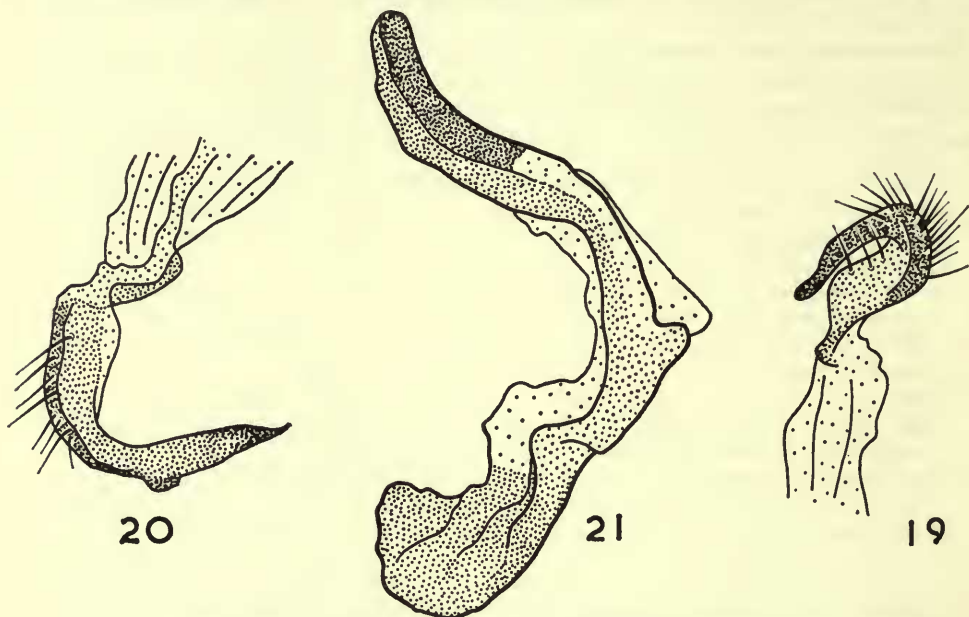
Prodromus subflavus Distant

(Text-figs. 2, 19–21)

1904a. *Prodromus subflavus* Distant, *Faun. Brit. Ind., Rhynchota*, 2: 437, 2 figs.

MALE. *Structure*. Head transverse, with eyes nearly twice as wide as long in the middle (38 : 22) ; vertex twice as wide as an eye (21 : 10) ; as seen from in front,

eyes projecting from vertex by nearly half length of eye; eye peduncle¹ about half as long as width of eye (6 : 10). Rostrum extending to bases of mesocoxae. Antennae inserted towards lower margin of eyes, and separated from inner margin of the latter by a distance equal to basal thickness of antennal segment I; relative lengths of segments, 25 : 53 : 54 : 95; segment I thickened, basal one-third slender. Pronotum across humeral angles $1\frac{3}{4}$ times as wide as it is long in the middle (74 : 43), and about $2\frac{2}{3}$ times as wide as anterior collar (74 : 28). Cuneus triangular, about twice as long as basal width (40 : 19); inner margin almost straight (Text-fig. 2); apex falls short



FIGS. 19-21. Male genitalia of *Prodrumus subflavus* Distant.
19, left paramere; 20, right paramere; 21, aedeagus.

of membranal apex by a length equal to length of head. Membranal vein broadly rounded at apex (Text-fig. 2). Genitalia illustrated in Text-figs. 19-21. Length of body 5.2 mm., width across humeral angles 1.33 mm.

Colour. Head, pronotum, scutellum, clavus, and venter ochraceous. Antennae, corium, cuneus, and legs stramineous; a band at base and apex of antennal segment II, another at apex of segment III, a broad band near middle and another near apex of segment IV, red; membrane pale hyaline; apices of tarsi brownish. Pubescence shiny white.

FEMALE. Unknown.

MATERIAL EXAMINED. CEYLON: Peradeniya, 1 ♂, xii.1901. Holotype, in the British Museum (Natural History)².

The colour of the antennae as described here differs from that given in the original description.

¹ As measured from vertex to dorsal middle of internal margin of eye.

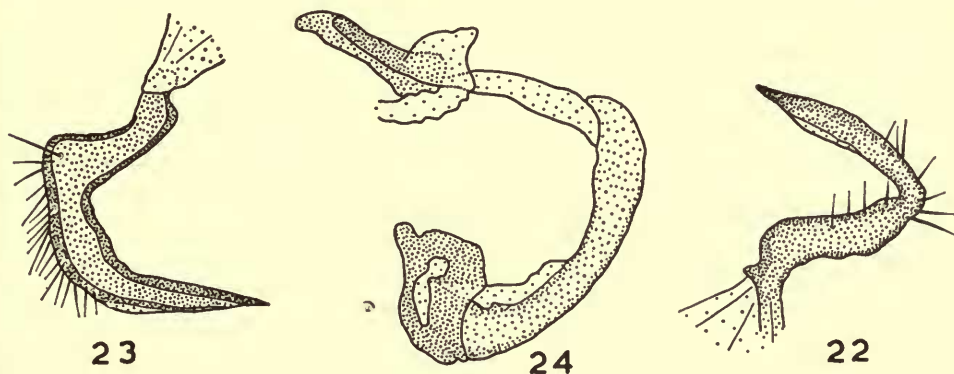
² Henceforth referred to by the initials "B.M."

Prodromus cuneatus Distant

(Text-figs. 8, 22-24)

1909. *Prodromus cuneatus* Distant, *Ann. Mag. nat. Hist.* 4 : 453.
 1910. *Prodromus cuneatus* Distant; Distant, *Faun. Brit. Ind., Rhynchota*, 5 : 246, 1 fig. (re-description).
 1911. *Prodromopsis cuneatus* (Distant) Poppius, *Öfvers. finska VetenskSoc. Förh.* 53A (2) : 4 (type of *Prodromopsis*).
 1948. *Sinervus cuneatus* (Distant) Carvalho, *Rev. bras. Biol.* 8 (2) : 191.

MALE. *Structure.* Head transverse, together with eyes twice as wide as long in the middle (50 : 24) ; vertex more than twice as wide as an eye (31 : 13) ; as seen from in front, eyes projecting from vertex by one-quarter length of eye ; eye peduncle about half as long as width of eye (6 : 13). Rostrum extending to bases of mesocoxae.



FIGS. 22-24. Male genitalia of *Prodromus cuneatus* Distant.
 22, left paramere ; 23, right paramere ; 24, aedeagus.

Antennae inserted towards lower margin of eyes, and narrowly separated from inner margin of the latter by a distance less than basal thickness of antennal segment I ; relative lengths of segments, 25 : 65 : 87 : 91 ; basal one-third of segment I slender. Pronotum across humeral angles slightly more than $1\frac{1}{2}$ times as wide as long in the middle (68 : 44), and about $2\frac{1}{2}$ times as wide as across pronotal collar (68 : 28). Cuneus long and narrow, about four times as long as wide at base (63 : 15) ; inner margin curved and somewhat parallel to outer margin (Text-fig. 8) ; apex falls short of membranous apex by a length equal to about one-third length of head. Membranous vein linear, then slightly curved towards apex (Text-fig. 8). Genitalia illustrated in Text-figs. 22-24 ; width across pronotal humeral angles 1.22 mm.

Colour. Head, pronotum, scutellum, and venter pale ochraceous. Antennal segments I and II pale ochraceous, basal one-third to nearly half of segment II and apical one-quarter of the same reddish-brown, extreme base pale ; segments III and IV brownish, with obscure reddish tinge. Hemelytra and legs stramineous, membrane pale hyaline, apices of tibiae pale ochraceous, apices of tarsi fuscous. Pubescence shiny white.

FEMALE. Unknown.

MATERIAL EXAMINED. CEYLON: Peradeniya, 1 specimen with abdomen missing, v. 1909 (Holotype). 1 ♂, same data. Both in B.M.

The structure of the antennae differs somewhat from that given in the original description. But this species can easily be distinguished by its elongated cuneus (approaching the condition found in *Sinervus* and a number of other Bryocorine genera), the almost wholly linear membranal vein, the broad pronotum, the relatively long antennal segment III, and by the colour of the antennae.

Prodromus clypeatus Distant

(Text-figs. 7, 25–28)

1904a. *Prodromus clypeatus* Distant, *Faun. Brit. Ind., Rhynchota*, 2: 437.

The male is described for the first time.

FEMALE. *Structure*. Head strongly transverse, together with eyes more than twice as wide as long in the middle (51:22), very densely covered with erect hairs; vertex more than twice as wide as an eye (31:13); as seen from in front, eyes projecting from vertex by slightly less than one-third length of eye; eye peduncle more than half as long as width of eye (9:13). Rostrum reaches middle of mesocoxae. Antennae inserted very near lower margin of eyes, and separated from inner margin of the latter by a distance equal to half thickness of basal portion of segment I; relative lengths of segments, 30:67:90:120; basal one-third of segment I slender. Pronotum across humeral angles more than $1\frac{1}{2}$ times as wide as long in the middle (77:47), and $2\frac{1}{2}$ times as wide as across pronotal collar (77:30). Cuneus long and narrow, a little less than four times as long as wide at base (56:15); inner margin curved, somewhat as in *P. cuneatus* (Text-fig. 7); apex of cuneus falls short of membranal apex by a distance about equal to two-thirds length of head. Membranal vein linear, gently curved towards apex (Text-fig. 7). Length of body 5.5 mm., width across humeral angles 1.54 mm.

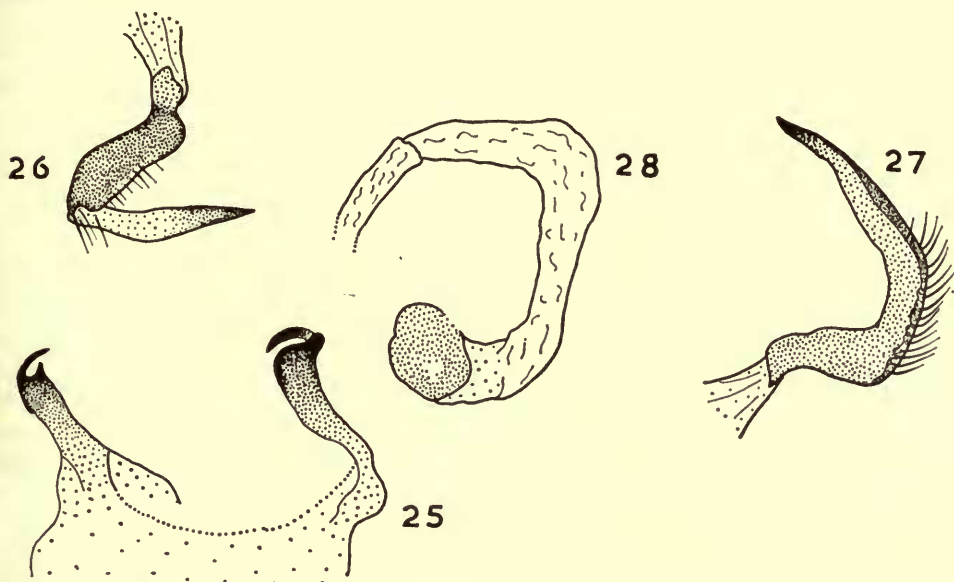
Colour. General colour stramineous. Head and inner margin of clavus ochraceous. Antennal segment I pale ochraceous, basal slender portion stramineous; segment II very pale ochraceous, apical one-quarter (or more) reddish; segments III and IV smoky brown with reddish suffusion, segment III broadly pale at base. Scutellum fuscous; base narrowly, and mesoscutum entirely, pale ochraceous. Membrane pale hyaline, vein pale ochraceous. Pubescence shiny white.

MALE. *Structure*. Head a little more than twice as wide as long (45:20); vertex twice as wide as an eye (27:12); eye peduncle two-thirds as long as an eye is wide (8:12). Lower margin of antennal sclerites almost on the same level as lower margin of eyes; relative lengths of antennal segments, 25:62:88:90. Pronotum across humeral angles $1\frac{3}{4}$ times as wide as long in the middle (73:40), and $2\frac{1}{2}$ times as wide as across pronotal collar (73:28). Cuneus three times as long as wide (58:18); apex falls short of membranal apex by half length of head. Genitalia illustrated in Text-figs. 25–28. Length of body 5.3 mm., width across humeral angles 1.3 mm. Otherwise, structure as in the female.

Colour. As in the female, except much paler.

MATERIAL EXAMINED. LOWER BURMA : Tenasserim Valley, Myitta, 2 ♀ (including Holotype) (Doherty). MALAYA : Jelebu, 5 ♂, 5 ♀ on *Musa sapientum* (young leaves), 9.xii.1934. All in B.M.

The corium is quite distinctly and densely pubescent, as in other species of the genus although in the original description Distant said, "... corium finely and obscurely pilose."



FIGS 25-28. Male genitalia of *Prodnromus clypeatus* Distant. 25, pygophore from above : hook-like structures holding and guiding right paramere ; 26, left paramere ; 27, right paramere ; 28, aedeagus.

The most remarkable feature of this species is the development of two hook-like structures on the dorsal aspect of the last abdominal segment which are presumably used to hold and guide the right paramere into position (Text-fig. 25). In other respects, *P. clypeatus* is very similar to *P. cuneatus*, from which it may be separated by the dense hairiness of the head, the extremely long antennal segment IV, the colour of the antennae, the relative lengths of cuneus and membrane, and the dark scutellum.

Prodnromus subviridis Distant

(Text-figs. 6, 29-31)

1904a. *Prodnromus subviridis* Distant, *Faun. Brit. Ind., Rhynchota*, 2 : 437.

MALE. Structure. Head transverse, together with eyes twice as wide as long in the middle (37 : 18), very densely covered with relatively long erect hairs ; vertex about twice as wide as an eye (22 : 10) ; as seen from in front, eyes projecting from

vertex by one-quarter length of eye; eye peduncle about half as long as width of an eye (6:10). Antennae inserted towards lower margin of eyes, and separated from inner margin of eyes by a distance equal to about half thickness of basal portion of segment I; relative lengths of segments, 24:46:48:90; basal one-quarter of segment I slender. Pronotum across humeral angles $1\frac{1}{2}$ times as wide as long in the middle (48:36), and about twice as broad as across pronotal collar (48:23), densely covered with relatively long erect hairs. Cuneus elongated, three times as long as wide at base (49:16); inner margin curved (Text-fig. 6); apex of cuneus falls short of membranous apex by two-thirds length of head. Membranous vein linear, but gently curved towards apex (Text-fig. 6). Genitalia illustrated in Text-figs. 29–31. Length of body 3.9 mm., width across humeral angles 0.86 mm.



FIGS. 29–31. Male genitalia of *Prodrromus subviridis* Distant.
29, left paramere; 30, right paramere; 31, aedeagus.

Colour. General colour stramineous, with obscure greenish tinge (in original description: "very pale greyish-green"). Apical one-quarter of antennal segment II reddish; segments III and IV brownish, with reddish tinge. Membrane pale hyaline; vein stramineous, with greenish tinge. Abdominal venter sometimes pale ochraceous. Apices of tarsi brownish. Pubescence shiny white.

FEMALE. Structure. Relative dimensions of width of pronotum across humeral angles, median length of pronotum, and width across anterior collar, 48:41:22. Length of body 4.1 mm., width across humeral angles 0.88 mm. Otherwise, structure as in the male.

Colour. Similar to male.

MATERIAL EXAMINED. LOWER BURMA: Tenasserim, Myitta, 1 ♂ (Holotype), 1 ♂, 1 ♀ (Doherty). All in B.M.

The cuneus is similar in structure in *P. subviridis*, *P. cuneatus*, and *P. clypeatus*, although it is distinctly shorter in *P. subviridis*. The latter species may also be distinguished by its relatively short antennal segment III—which recalls the condition found in *P. subflavus*. The male genitalia of *P. subviridis* is, however, similar to that of *P. cuneatus*; and the eyes project from the vertex as shortly as in this species.

Other salient features of *P. subviridis* are : the somewhat narrow vertex ; the relatively long, erect, and very dense pubescence on the head and pronotum ; and the elongated pronotum.

***Prodromus melanonotus* Carvalho**

(Text-fig. 4)

1951. *Prodromus melanonotus* Carvalho, *Rev. Zool. Bot. afr.* **45** (1-2) : 109, figs.

MALE. Structure. Head transverse, together with eyes nearly twice as wide as long in the middle (42 : 22) ; vertex twice as wide as an eye (25 : 12) ; frons swollen greatly ; as seen from in front, eyes projecting from vertex by one-quarter length of eye, as seen from above, eyes appearing hardly with a notch in the middle, produced posteriorly to about level of anterior margin of pronotum ; eye peduncle about half as long as eye width (5 : 12) ; eyes large, from the side appearing to occupy about half height of head. Rostrum extends to apices of precoxae. Antennae inserted near middle of eyes, and almost contiguous with inner margin of the latter ; relative lengths of segments, 35 : 54 : 54 : 100 ; basal width of segment I slender. Pronotum across humeral angles $1\frac{1}{4}$ times as wide as long in the middle (56 : 45), and about twice as wide as across pronotal collar (56 : 27). Hemelytra almost linear at the sides. Cuneus triangular, three times as long as basal width (45 : 15) ; inner margin straight, slightly curved towards apex (Text-fig. 4) ; apex of cuneus falls short of membranous apex by more than two-thirds length of head. Membranous vein forming a right-angle at apex (Text-fig. 4). Length of body 4.1 mm., width across humeral angles 1.0 mm.

Colour. Head black, anteclypeus largely flavous. Antennal segment I brownish to fuscous, base flavous ; the rest of antennae fuscous to black. Pronotum fuscous to black, calli darker, collar whitish. Scutellum black. Hemelytra stramineous ; clavus black, except a stramineous streak on basal one-quarter of claval suture ; inner margin of corium (except at base), apical margin of corium, continuing on to inner margin of cuneus, also membranous vein (except next to cuneus), fuscous ; lateral margin of corium and cuneus brown. Venter largely dark brown to fuscous, basisternum somewhat paler. Legs stramineous ; small spots on coxae, apices of posterior aspect of middle femora broadly, posterior aspect of hind femora largely, basal half of fore and middle tibiae, hind tibiae except at base and apex, and tarsi apically, brownish. Pubescence pale and shiny.

FEMALE. Structure. Head twice as wide as long (40 : 20) ; vertex twice as wide as an eye (23 : 11). Cuneus about $2\frac{1}{2}$ times as long as wide at base (45 : 19) ; apex of cuneus falls short of membranous apex by three-quarters length of head. Length of body 4.0 mm., width across humeral angles 0.97 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

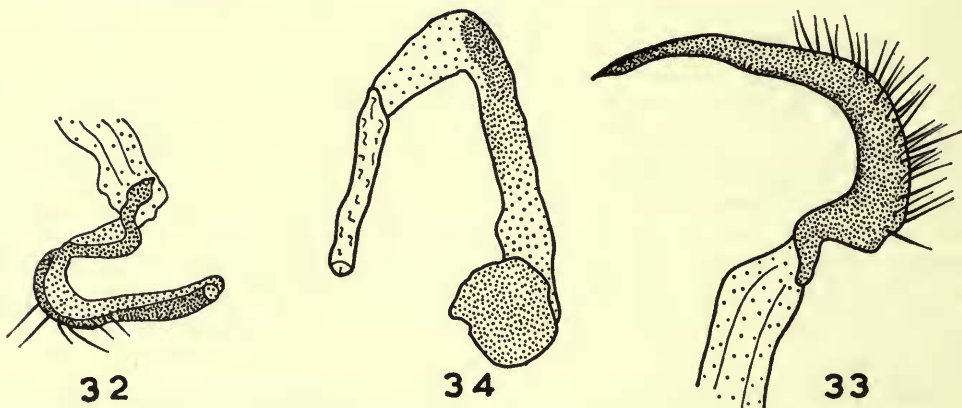
MATERIAL EXAMINED. GHANA (Gold Coast) : 9 m. N. of Cape Coast, 1 ♂, 9.ix.1943 (H. E. Box) (Holotype). BRITISH CAMEROONS : Mungo River, nr. Tiko, 1 ♀, 14.i.1944 (H. E. Box) (Allotype). Both in B.M.

P. melanonotus is characterized by the structure of the eyes, the short rostrum, the insertion of the antennae, the relatively long pronotum, the more or less parallel-sided hemelytra, the rectangular membranal vein, and by the dark coloration. This species approaches *P. nimbus* in colour; but the colour of the head in the latter is orange, and its anteclypeus is dark.

***Prodromus kawandanus* sp. n.**

(Text-figs. 1, 32-34)

MALE. Structure. Head transverse, together with eyes nearly twice as wide as long in the middle (41 : 22); vertex more than twice as wide as an eye; as seen from in front, eyes projecting above vertex by one-third length of eye; eye peduncle



FIGS. 32-34. Male genitalia of *Prodromus kawandanus* sp. n.
32, left paramere; 33, right paramere; 34, aedeagus.

about half as long as eye width (6 : 11). Rostrum nearly reaching middle of meso-basisternum, and only a little short of bases of mesocoxae. Antennae inserted at lower margin of eyes, lower margin of antennal sclerites ventral to lower margin of eyes, antennae separated from eyes by a distance equal to half thickness of basal portion of segment I; relative lengths of segments, 25 : 51 : 49 : 73; slightly more than one-quarter of segment I slender. Pronotum across humeral angles about $1\frac{1}{2}$ times as wide as long in the middle (60 : 39), and more than twice as broad as across pronotal collar (60 : 27). Cuneus triangular, a little more than twice as long as broad at base (52 : 24); inner margin almost straight (Text-fig. 1); apex of cuneus falling short of membranal apex by a distance equal to length of head. Membranal vein nearly forming a right angle at apex (Text-fig. 1). Genitalia as shown in Text-figs. 32-34. Length of body 4.7 mm., width across humeral angles 1.08 mm.

Colour. General colour bright green, somewhat fading to greenish-yellow in old specimens. Antennal segments I and II reddish, base of segment I yellowish-green, middle of segment II sometimes dusky; segments III and IV fuscous, with a

reddish tinge. Claval commissures narrowly brownish. Membranal vein green. Apices of tibiae and tarsi pale ochraceous. Pubescence shiny white.

FEMALE. Unknown.

Holotype ♂. UGANDA: Kawanda, at mercury-vapour light, 4.vi.1959. *Paratypes*. Same locality as above, all at mercury-vapour light: 2 ♂, iv.1958; 3 ♂, vi.1958; 2 ♂, vii.1958; 1 ♂, 28.ix.1958; 1 ♂, 22.x.1958; 3 ♂, v.1959; 3 ♂, vi.1959.

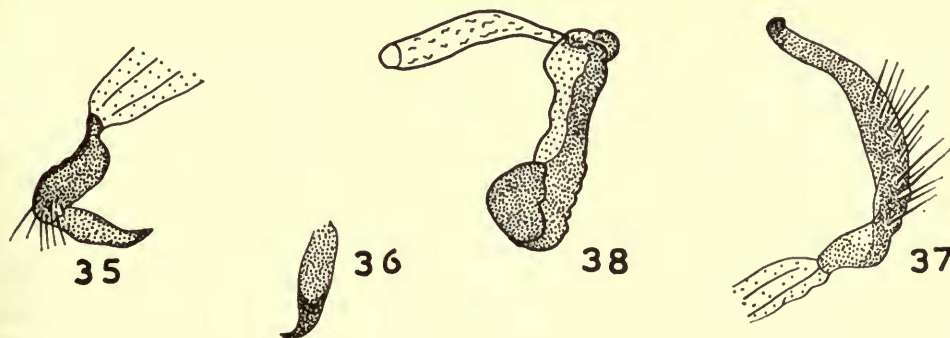
Holotype and four paratypes in B.M. The rest returned to Kawanda Research Station, Uganda.

P. kawandanus is at once distinguished from *P. aethiopicus* by its red antennal segments I and II, and by the subequal segments II and III. In *P. aethiopicus* only the apex of antennal segment II is red, and segment III is distinctly shorter than segment II.

Prodromus flavonotus sp. n.

(Text-figs. 5, 35-38)

MALE. *Structure*. Head transverse, together with eyes slightly more than twice as wide as long in the middle (40:18); vertex slightly more than twice as wide as an eye (25:11); from in front, eyes projecting above vertex by about one-third length



FIGS. 35-38. Male genitalia of *Prodromus flavonotus* sp. n. 35, left paramere; 36, apex of the same in external view; 37, right paramere; 38, aedeagus.

of eye; eye peduncle more than half as long as eye width (7:11). Rostrum extends to apices of fore coxae. Antennae inserted at lower margin of eyes, lower margin of antennal sclerites on the same level as lower margin of eyes, antennae separated from eyes by a distance less than half thickness of basal portion of segment I; relative lengths of segments, 24:50:64:104; basal one-third of segment I slender. Pronotum across humeral angles nearly as wide as it is long (50:48), and twice as broad as across pronotal collar (50:24); collar as strongly punctured as posterior lobe of pronotal disc. Scutellum very finely transversely rugose. Cuneus about three times as long as basal width (43:15); inner margin somewhat curved (Text-fig. 5); apex of cuneus falls short of apex of membrane by a distance equal to two-thirds length of

head. Membranal vein broadly rounded towards apex. Genitalia illustrated in Text-figs. 35-38. Length of body 3.9 mm., width across humeral angles 1.00 mm.

Colour. Head brown, sides and front yellowish-brown. Antennal segment I stramineous, apical one-third brown, extreme apex pale; the rest of antennae dark brown to fuscous, extreme apex of segment II reddish, segments III and IV with some reddish suffusion. Pronotum fuscous; a spot in the middle of the disc (including inner halves of calli) stramineous. Scutellum fuscous. Hemelytra pale greenish-yellow; claval inner margin and claval commissures fuscous; membranal vein greenish. Venter and legs stramineous; pro- and meso-epimera fuscous; apices of tarsi brownish. Pubescence pale, shiny.

FEMALE. Unknown.

Holotype ♂. GHANA: Nkawkaw, 5.vi.1943 (H. E. Box). In B.M.

Like *P. melanonotus*, this species has a very short rostrum, and the thorax is also dark in colour. But in *P. flavonotus* there is a pale spot in the middle of the pronotum, and the collar is uniformly dark. Moreover, the eye in the new species is not so peculiar in structure as in *P. melanonotus*, the structure of the antennae is different, the pronotum is longer, and the hemelytra are not extensively marked with dark areas.

Prodromus cochinensis sp. n.

(Text-fig. 9)

FEMALE. *Structure.* Head transverse, together with eyes about twice as wide as long in the middle (45 : 23), very densely covered with erect hairs; vertex $2\frac{1}{2}$ times as wide as an eye (30 : 12); as seen from in front, eyes projecting above vertex by nearly one-third length of eye; eye peduncle two-thirds as long as width of eye (8 : 92). Rostrum reaches bases of mesocoxae. Antennae inserted towards lower margin of eyes, separated from inner margin by a distance equal to half thickness of basal portion of antennal segment I; relative lengths of segments, 28 : 57 : 69 : 72; basal one-quarter of segment I slender. Pronotum across humeral angles $1\frac{1}{2}$ times as wide as median length (64 : 42), and a little more than twice as broad as across anterior collar (64 : 29). Cuneus elongated, a little more than three times as long as wide at base (50 : 15); inner margin curved (Text-fig. 9); apex of cuneus falls short of apex of membrane by a distance equal to half length of head. Membranal vein gently curved towards apex (Text-fig. 9). Length of body 4.7 mm., width across humeral angles 1.15 mm.

Colour. Head, anterior lobe of pronotum, and scutellum very pale ochraceous. Antennal segments I and II very pale ochraceous, apical one-quarter of segment II reddish; segments II and IV brownish. Posterior lobe of pronotum, and hemelytra, stramineous; clavus, inner and apical margins of corium, and membranal vein with a pale greenish tinge. Venter and legs stramineous; venter with pale ochraceous suffusion; apices of tarsi brownish. Pubescence shiny white.

MALE. Unknown.

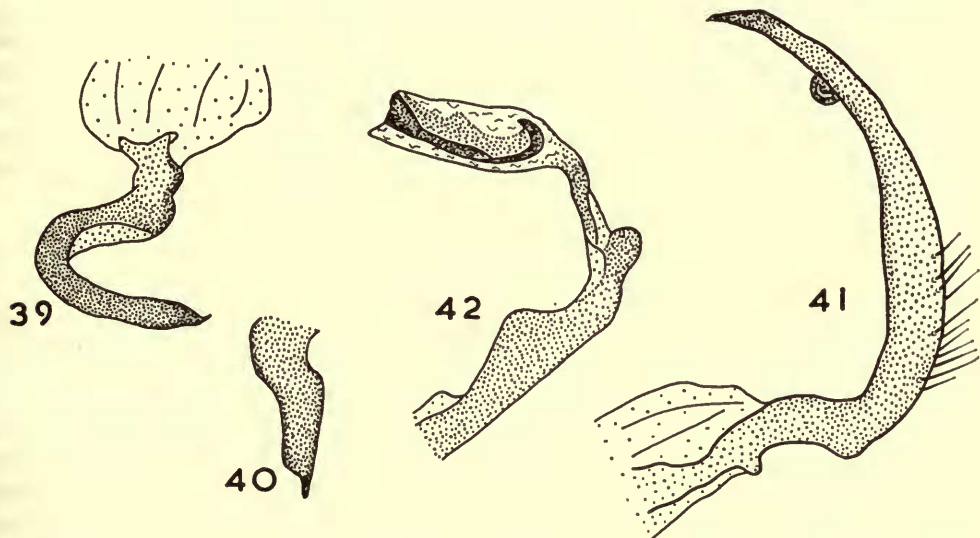
Holotype ♀. COCHIN STATE, on plantain leaves, 8.xi.1936 (Venkatasubban). In B.M.

The specimen was identified as *P. subflavus* in the British Museum collection. However, there is no doubt that it represents a new species (herein described as *P. cochiniensis*) very close to *P. clypeatus*, from which it may be distinguished by the pale scutellum, and by the different proportional lengths of antennal segments.

Prodromus pedunculus sp. n.

(Text-figs. 10, 39-42)

MALE. *Structure.* Head very long, from above appears transverse, together with eyes less than twice as broad as median length (46 : 26) ; vertex twice as wide as an



FIGS. 39-42. Male genitalia of *Prodromus pedunculus* sp. n. 39, left paramere ; 40, the same : outer aspect of apex ; 41, right paramere ; 42, aedeagus.

eye (26 : 13) ; anteclypeus distinctly swollen ; eyes very strongly projecting above vertex, as seen from in front projecting above vertex by half length of eye, from the side appears elongated ventrally ; eye peduncle nearly as long as width of eye (11 : 13). Rostrum extends to apices of precoxae. Antennae inserted towards lower margin of eyes, almost contiguous with eyes ; relative lengths of segments, 50 : 94 : 107 : (IV missing) ; nearly basal half of segment I slender. Pronotum across humeral angles $1\frac{1}{4}$ times as broad as long in the middle (68 : 54), and three times as wide as across pronotal collar (68 : 23). Cuneus long and narrow, $3\frac{1}{2}$ times as long as wide at base (68 : 20) ; inner margin strongly curved (Text-fig. 10) ; apex of cuneus nearly reaching apex of membrane, falling short by a distance equal to only one-fifth length of head. Membranal vein weakly curved towards apex (Text-fig. 10). Legs long and slender. Dorsum scantily pubescent. Genitalia illustrated in Text-figs. 39-42. Length of body 5.7 mm., width across humeral angles 1.22 mm.

Colour. Head and pronotum orange, anteclypeus sometimes reddish. Antennae brown or dark brown, slender portion of segment I stramineous. Scutellum stramineous. Hemelytra stramineous, inner margin and commissures of clavus sometimes orange. Venter stramineous, thorax with ochraceous markings, abdomen fuscous apically. Coxae stramineous to ochraceous; femora orange, with brownish markings towards apex; tibiae pale ochraceous or greyish-brown; tarsi stramineous, fuscous apically. Pubescence shiny white.

FEMALE. Unknown.

Holotype ♂. DUTCH NEW GUINEA: Cyclops Mts., Sabron, 930 ft., vi. 1936 (L. E. Cheesman). *Paratype* ♂. Humboldt Bay Dist., Bewan Mts., 400 metres, vii. 1937. Both in B.M.

The long eye peduncle and the elongated cuneus (which terminates near the apex of the hemelytral membrane) displayed in *P. pedunculus* apparently bridge the gap between *Prodromus* and *Sinervus*; but other characters—including the male genitalia—point to its being a good *Prodromus* species. Other salient features of *P. pedunculus* are: the long head; the swollen anteclypeus; the very long antennae; the long, slender, basal portion of antennal segment I; the narrow pronotum; and the long, slender legs.

***DUDUCORIS* gen. n.**

Small; general shape elongate, at least slightly widened at the sides, somewhat flattened dorsoventrally. Body covered with short, shiny white hairs. Head smooth, shiny; from above appears distinctly transverse, wider than pronotal collar; from the side appears vertical and inclined backwards, much shorter than high; vertex non-sulcate; frons swollen, blunt; anteclypeus distinctly swollen, delimited from frons by a deep depression and a transverse sulcus, anterior margin of anteclypeus sinuate when viewed from the side. Eyes sub-stylate, eye peduncle separated from dorsum of head by a slightly oblique longitudinal depression; eyes occupy less than half height of head; from the side and above they appear elongate, from above they appear kidney-shaped, ventral margin also slightly notched near the middle (Text-fig. 58). Antennae densely covered with short, semi-erect, shiny white hairs; segment I thickened but slender at base, the other segments linear in thickness, segment II about as thick as segment I at base, segments III and IV thinner. Pronotum densely (almost reticulately) punctate, the punctures somewhat shallow, disc shiny; posterior lobe hardly convex or declivous; calli flattened, hardly separated from each other by a median depression, obscurely punctate; collar thick, about as thick as antennal segment I; posterior margin of disc deeply emarginate, exposing mesoscutum, anterior margin of collar inwardly curved. Scutellum flattened, a little broader than long, smooth, with sparse hairs. Hemelytra semi-opaque, densely hairy, with very dense irregularly arranged fine punctures; sides at least a little widened at the sides; embolium equally wide throughout; cuneus triangular; membranal vein broadly rounded at apex or nearly quadrangulate, beset by minute shiny white pubescence. Legs short and thickened. Type-species: *Duducoris incisus* sp. n.

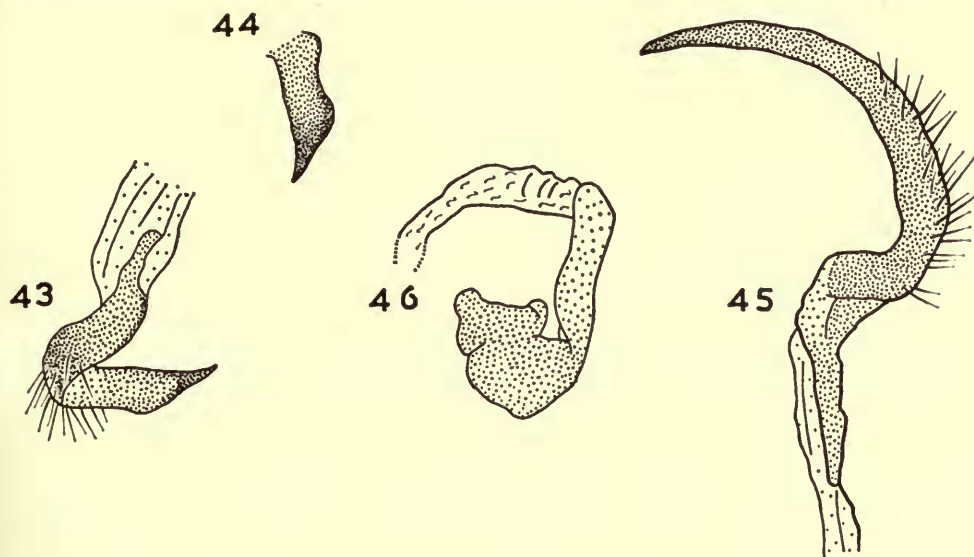
The new genus seems to be closely allied to *Prodromus*. But *Duducoris* can be

differentiated in that the body is flattened, the vertex is non-sulcate, the anteclypeus is much more swollen, the eyes only weakly project above the vertex, the first antennal segment is only shortly slender at base, the pronotum is deeply emarginate posteriorly, the calli are obscure, and in that the legs are short and robust.

Duducoris incisus sp. n.

(Text-figs. 43-46, 52 and 55)

MALE. *Structure.* Head, including eyes, nearly twice as wide as long in the middle (52 : 28) ; vertex slightly more than four times as wide as an eye (39 : 9) ; frons rounded in front ; eyes with lateral margins strongly curved when viewed from



FIGS. 43-46. Male genitalia of *Duducoris incisus* gen. et sp. n. 43, left paramere ; 44, the same : outer aspect of apex ; 45, right paramere ; 46, aedeagus.

above (Text-fig. 52). Rostrum extends to apices of procoxae. Antennae inserted at middle of eyes ; relative lengths of segments, 29 : 62 : 56 : 50. Pronotum across humeral angles about $1\frac{3}{4}$ times as wide as median length (68 : 35), and twice as wide as across anterior collar (68 : 35) ; posterior margin deeply emarginate, the emargination broadly rounded (Text-fig. 55) ; posterior lobe distinctly punctate, anterior lobe and collar obscurely so ; collar as thick as antennal segment I ; disc glabrous, except for minute hairs on a broad band along posterior margin. Hemelytra only slightly widened in the middle ; cuneus with inner margin slightly curved towards base. Genitalia illustrated in Text-figs. 43-46. Length of body 5.4 mm., width across humeral angles 1.22 mm.

Colour. General colour bright green. Head, scutellum, and thoracic venter yellowish-green. Apex of antennal segment II, also segments III and IV, ochraceous

or yellowish-green, with an obscure tinge of red on apex of segment II. Legs pale green, apices of femora and bases of tibiae narrowly suffused with red.

FEMALE. Structure. Head twice as wide as long (50 : 25); vertex $4\frac{1}{2}$ times as wide as an eye (36 : 8). Relative lengths of antennal segments, 28 : 54 : (III and IV missing). Relative dimensions of width across humeral angles of pronotum, median length of the latter, and width across pronotal collar, 67 : 36 : 33. Length of body 5.1 mm., width across humeral angles 1.21 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

Holotype ♂. EAST AFRICA: Uganda, Kawanda, at mercury-vapour light, 6.vii.1959. **Allotype** ♀. CONGO: Sakania, ix.1931 (Miss A. Mackie). **Paratypes.** Same data as for holotype: 1 ♂, 18.v.1958; 1 ♂, 22.x.1958; 1 ♂, 20.vi.1959.

The holotype, allotype and one paratype are in B.M. Two paratypes have been returned to Kawanda.

Duducoris angulatus sp. n.

(Text-figs. 47-51, 53, 56 and 58)

MALE. Structure. Head, including eyes, about $1\frac{2}{3}$ times as broad as long in the middle (43 : 27); vertex nearly three times as wide as an eye (28 : 10); frons somewhat truncate in front; eyes elongate when viewed from above, with lateral margins almost straight in the middle (Text-fig. 53). Rostrum reaches apices of middle coxae. Antennae inserted below middle of eyes with the lower margin of antennal sclerites just about on the same level as lower margin of eyes; relative lengths of segments, 31 : 60 : 37 : 65. Pronotum across humeral angles about $1\frac{1}{3}$ times as wide as median length (58 : 42), and about $1\frac{1}{2}$ times as wide as across anterior collar (58 : 32); posterior margin with the deeply emarginate portion angulate in the middle (Text-fig. 56); pronotal collar as distinctly punctate as on posterior lobe, calli obscurely punctate, collar thicker than antennal segment I; disc glabrous. Hemelytra widened in the middle (more distinctly so than in *D. incisus*); cuneus broadly triangular, inner margin straight. Genitalia illustrated in Text-figs. 47-51. Length of body 4.9 mm., width across humeral angles 1.04 mm.

Colour. General colour bright green, old specimens paler or ochraceous. Head and scutellum yellowish-green. Antennal segments II and III at apex broadly reddish, a band near middle and apical one-third of segment IV, reddish. Legs pale yellowish-green.

FEMALE. Structure. As in the male, except: relative lengths of antennal segments, 29 : 56 : 38 : 75.

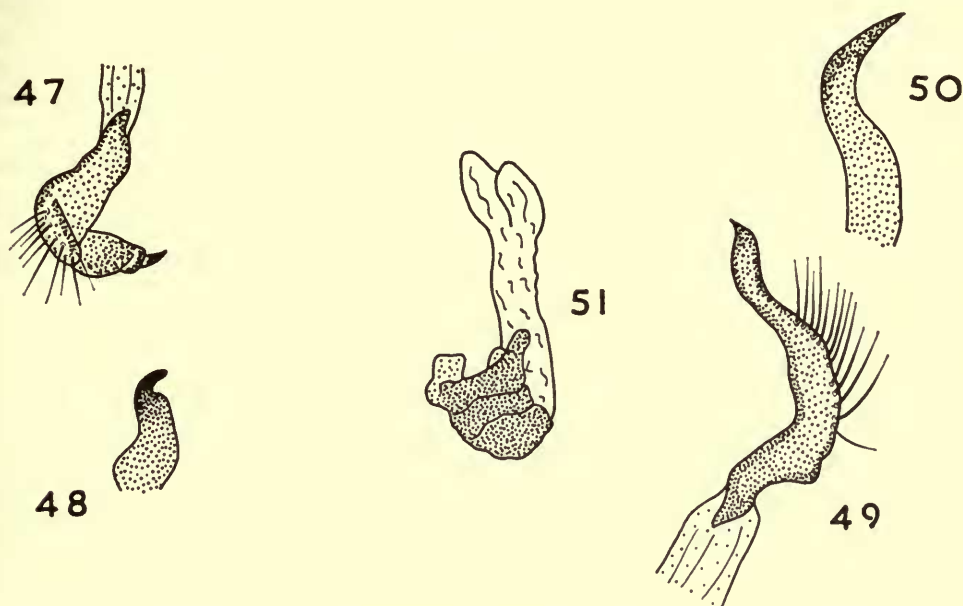
Colour. Similar to that of the male.

Holotypes ♂. EAST AFRICA: Uganda, Kampala, 14.xi.1930 (H. H. [argreaves]). **Paratypes.** Kawempe, nr. Kampala, 1 ♀, 8.v.1957. Kawanda, 1 ♀, 1.iv.1958; 1 ♂, 31.vi.1958 (both at light).

The holotype and one paratype are in B.M. Two paratypes have been sent to Kawanda.

This species differs from *D. incisus* in the structure of the male genitalia, particularly in (1) the twisted right paramere, and in (2) the apically hooked left paramere.

In external structure, *D. angulatus* is notable for the angulate emargination of the posterior margin of the pronotum, the relatively longer pronotum, the distinctly punctate collar, the elongate eyes, the short third segment of the antennae, the



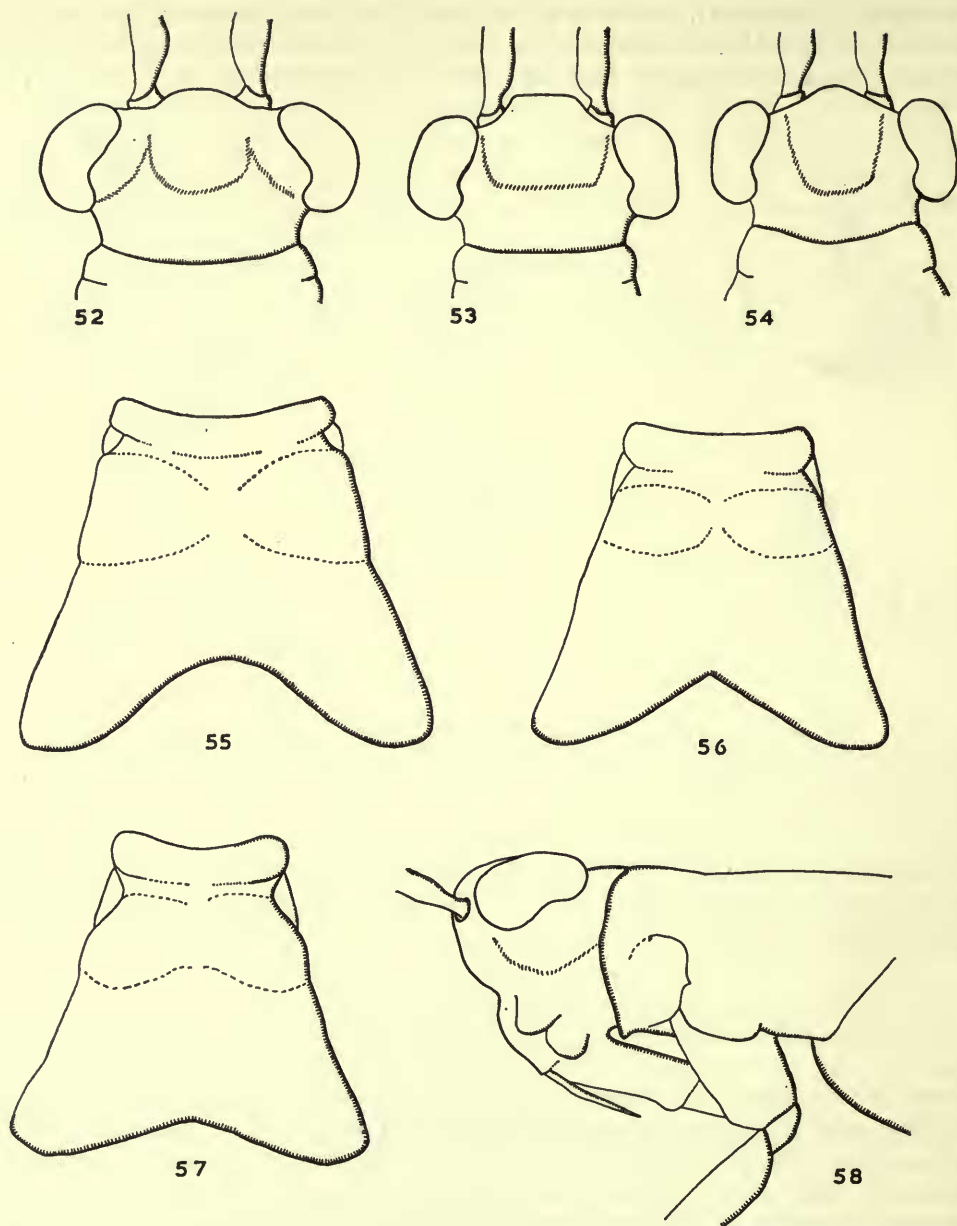
FIGS. 47-51. Male genitalia of *Duducoris angulatus* gen. et sp. n. 47, left paramere ; 48, the same : outer aspect of apex ; 49, right paramere ; 50, the same : inner aspect of apex ; 51, aedeagus.

different insertion of the antennae, the much longer rostrum, the narrower vertex, and the more distinctly expanded hemelytra. The colour of the antennae and legs is also different.

Duducoris pilosus sp. n.

(Text-figs. 54 and 57)

FEMALE. Structure. Densely pubescent, with moderately long hairs. Head, including eyes, $1\frac{1}{2}$ times as broad as long in the middle (40 : 26) ; vertex $3\frac{1}{2}$ times as wide as an eye (28 : 8) ; frons broadly rounded in front ; eyes elongate when viewed from above, with lateral margins almost straight in the middle (Text-fig. 54), as is the case in *D. angulatus*. Rostrum extends slightly beyond apices of middle coxae. Antennae inserted at lower margin of eyes, with lower margin of antennal sclerites slightly below lower margin of eyes ; relative lengths of segments, 31 : 62 : 40 : (IV lost). Pronotum across humeral angles more than $1\frac{1}{3}$ times as broad as long in the middle (59 : 43), and nearly twice as wide as across pronotal collar (59 : 31) ; posterior margin of pronotum emarginate, rather shallow, obtusely angulate (Text-fig. 57) ; collar about as thick as antennal segment I, nearly as distinctly punctate as on



FIGS. 52-58. External structure in *Duducoris* gen. n. Sculpturing and pubescence not shown. 52, dorsal aspect of head of *D. incisus* sp. n.; 53, the same for *D. angulatus* sp. n.; 54, the same for *D. pilosus* sp. n.; 55, dorsal aspect of pronotum of *D. incisus*; 56, the same for *D. angulatus*; 57, the same for *D. pilosus*; 58, lateral view of fore part of body of *D. angulatus*.

posterior lobe, calli obscurely punctate; disc densely covered with erect, shiny white hairs. Hemelytra widened in the middle (as in *D. angulatus*); cuneus broadly triangular, inner margin straight. Length of body 5.0 mm., width across humeral angles 1.06 mm.

Colour. General colour bright green. Head, pronotum, and scutellum yellowish-green. Antennae yellowish-green; segments I and II with irregular reddish markings, apices of segments II and III broadly red. Legs pale green.

MALE. Unknown.

Holotype ♀. EAST AFRICA: Uganda, Kawanda at light, 1.v.1958. In B.M.

D. pilosus is clearly allied to *D. angulatus*. But it may be distinguished from the latter by the following characters: the shallower and more obtuse emargination of the posterior margin of the pronotum, the narrower head, the broader vertex, the lower insertion of the antennae, and by the pubescence on the pronotum.

Genus *KUNUNGUA* Carvalho

Until recently, only two species of *Kunungua* were known: *K. boxi* Carvalho, the type species, from Ghana (West Africa), and *K. cinnamonea* Carvalho, from the Congo. A third species is now recognized from Ukerewe Is. in Lake Victoria, and it is described in the following paragraphs.

Kunungua ukerewensis sp. n.

(Text-figs. 59–61)

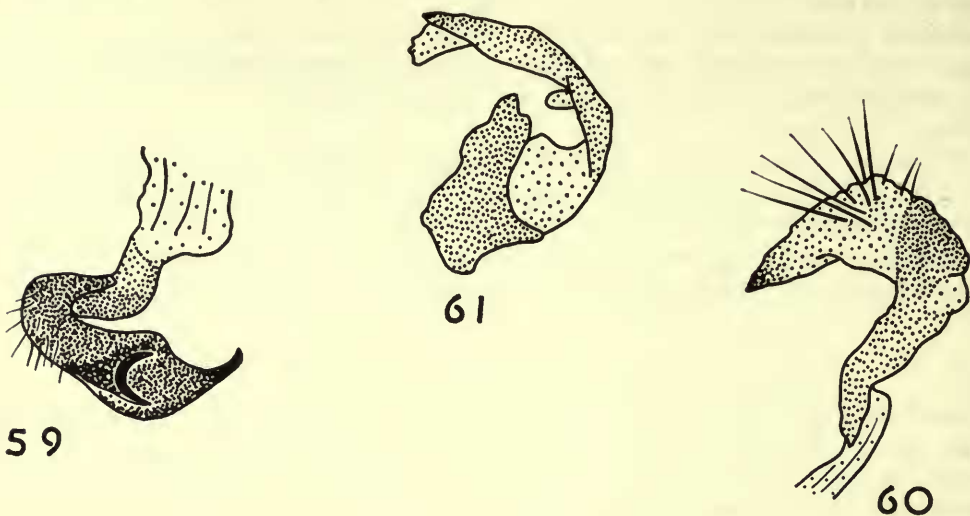
FEMALE. Structure. Head strongly transverse, together with eyes $3\frac{1}{2}$ times as broad as long in the middle (46:13); vertex more than four times as wide as an eye (35:8); frons blunt; eyes from in front distinctly projecting above vertex, stylate, as seen from above eye peduncle slightly longer than width of eye. Rostrum extends slightly beyond apices of fore coxae. Relative lengths of antennal segments, 24:43:44:(IV missing). Pronotum across humeral angles a little broader than median length (56:51), and more than twice as wide as across pronotal collar (56:25); calli prominently swollen, with a deep depression between them. Cuneus about $2\frac{1}{2}$ times as long as wide at base. Pubescence on body short. Length of body 3.9 mm., width across humeral angles 1.01 mm.

Colour. Head fuscous, anteclypeus and apices of juga yellowish-brown. Antennae dark brown to fuscous, base of segment I stramineous. Pronotum and scutellum fuscous, anterior collar extensively or largely pale yellowish-brown. Hemelytra stramineous; clavus fuscous to black; a band along inner margin of corium from about level of claval apex to apex of cuneus, also outer margin and apical half of cuneus, brown; basal area of membrane, including nearly the whole cell, smoky brown. Venter fuscous to black. Coxae and bases of femora broadly stramineous; the rest of the legs yellowish-brown, tibiae and tarsi paler, apices of tarsi fuscous.

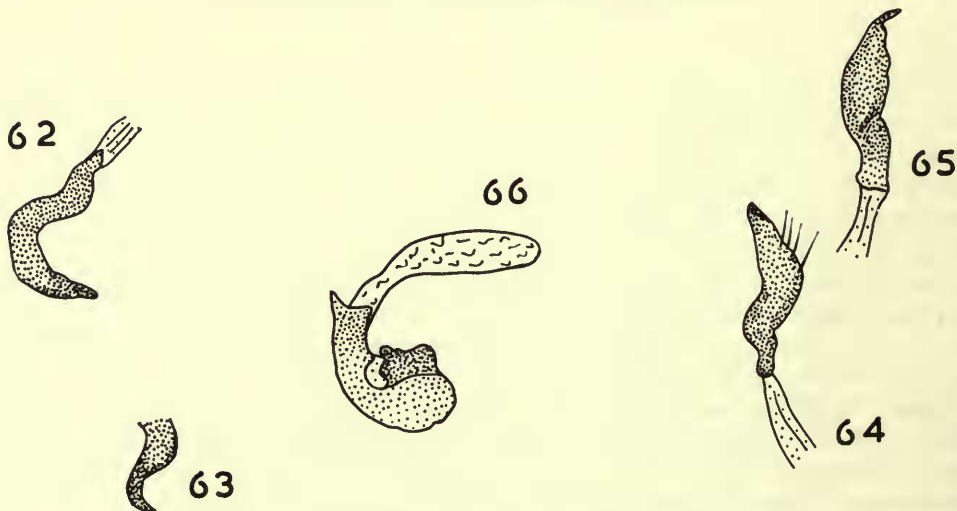
MALE. Structure. Relative lengths of antennal segments, 24:24:(III and IV missing). Genitalia illustrated in Text-figs. 59–61. Otherwise, structure as in the female.

Colour. Similar to that of the female, except: legs largely stramineous.

Holotype ♀. EAST AFRICA: Tanganyika, Ukerewe Is. (L. Victoria) (Father Conrads). *Paratypes.* Same data: 1 ♂, 1 ♀.



FIGS. 59-61. Male genitalia of *Kunungua ukerewensis* sp. n.
59, left paramere; 60, right paramere; 61, aedeagus.



FIGS. 62-66. Male genitalia of *Kunungua boxi* Carvalho. 62, left paramere; 63, the same: inner aspect of apex; 64 and 65, right paramere; 66, aedeagus.

The holotype is in B.M. The paratypes have been returned to the Coryndon Museum, Kenya.

The structure of the male genitalia in *K. ukerewensis* does not appear to be very close to that of *K. boxi*, the type species of the genus (Text-figs. 62-66). All other

characters of the new species, however, follow the diagnosis of *Kunungua*; and for this reason the species is assigned to this genus. Apart from the male genitalia, *K. ukerewensis* may be distinguished from the other two species of the genus (*K. boxi* and *K. cinnamonea*) by the relatively longer rostrum and cuneus, the different proportional lengths of antennal segments, the less prominent frons, and especially by the long eye peduncle. The colour of *K. ukerewensis* is also different, particularly that of antennae and pronotum.

Tribe ODONIELLINI

CHAMUS-complex

In his 1912 monograph of the Ethiopian Miridae Poppius propounded the following characters to distinguish *Chamopsis* from *Chamus*, namely that in *Chamopsis* (1) the last three antennal segments are almost without hairs, (2) that the body is densely granulate, (3) that the femora are glabrous, and (4) that the embolium is not transparent. Actually, these characters are not distinctive and grade into the condition found in *Chamus*; or, in the case of the first and third characters, probably result from the examination of a damaged or atypical specimen.

The present author's studies have now shown that, although *Chamopsis* is very closely related to *Chamus* it is nevertheless a good genus. New diagnostic characters have been found (see below). In his revision of the Ethiopian Bryocorinae, China (1944: 181) questioned the generic standing of *Chamopsis*. But, as we shall see later, the species which raised these doubts in his mind—originally described as *Chamus boxi* China—in fact belongs to *Chamopsis*.

Chamopsis

1. Frontal spines: the two outer ones in horizontal plane, and directed outwards, i.e. sideways (Text-figs. 73 and 74)
2. Hairs on antennal segment II to IV: about as long as or a little longer than width of antennal segment
3. Tarsal claw: with a prominent basal tooth

Chamus

- Two outer spines directed upwards (Text-figs. 67, 69 and 71).
- At least twice as long as width of antennal segment.
- Without such a prominent basal tooth.

The structure of the male genitalia does not help in the characterization of the three genera comprising the *Chamus*-complex (*Chamus*, *Chamopsis*, and *Parachamus*). Indeed, specific differences are only slight, except for *Chamus mefisto* and *Chamus conradsonianus* which have a distinctive vesica. Within the complex, *Chamus* and *Chamopsis* are very close together, while *Parachamus* stands a little apart—although all three genera exhibit a similar aspect, and undoubtedly form a distinct group within the tribe Odoniellini.

Chamus and *Chamopsis*

1. Pronotum dull, moderately or very densely pubescent
2. Pronotum without protuberances

Parachamus

- Shiny, very sparsely pubescent.
- With two large protuberances near basal lateral angles.

3. Calli on pronotum : not tuberculate . Tuberculate, i.e. conical in shape (Text-fig. 76).
4. Pubescence on antennal segment I : more . A broad area between the basal narrower or less uniformly hairy part and the apical thicker part without hairs.
5. Fore tibiae : with a distinct terminal spur, . Without a distinct spur (Text-fig. 79).
the spur forming one end of apical comb
of spines (Text-figs. 77 and 78).

Assignment to Genera of Species of the Chamus-complex

Species	Original assignment	Present genus
<i>bellus</i> Distant	. <i>Chamus</i> .	<i>Parachamus</i> (Schouteden, 1946).
<i>conradsianus</i> Schouteden	. <i>Chamus</i> .	<i>Chamus</i> .
<i>conradti</i> Reuter & Poppius	. <i>Chamopsis</i> .	<i>Chamopsis</i> .
(= <i>boxi</i> China)	. <i>Chamus</i> .	<i>Chamopsis</i> .
<i>incertus</i> Reuter & Poppius	. <i>Chamus</i> .	<i>Chamus</i> .
<i>mefisto</i> Reuter & Poppius	. <i>Chamus</i> .	<i>Chamus</i> .
<i>overlaeti</i> Schouteden	. <i>Chamus</i> .	<i>Chamus</i> .
<i>reuteri</i> Poppius	. <i>Chamus</i> .	<i>Chamus</i> (?) ¹ .
<i>schroederi</i> Poppius	. <i>Chamus</i> .	<i>Chamus</i> . ¹
<i>tuberculatus</i> Distant	. <i>Chamus</i> .	<i>Chamopsis</i>
<i>wealei</i> Distant	. <i>Chamus</i> .	<i>Chamus</i> .
(= <i>ghesquierei</i> Schouteden)		

¹ Not examined in the present study.

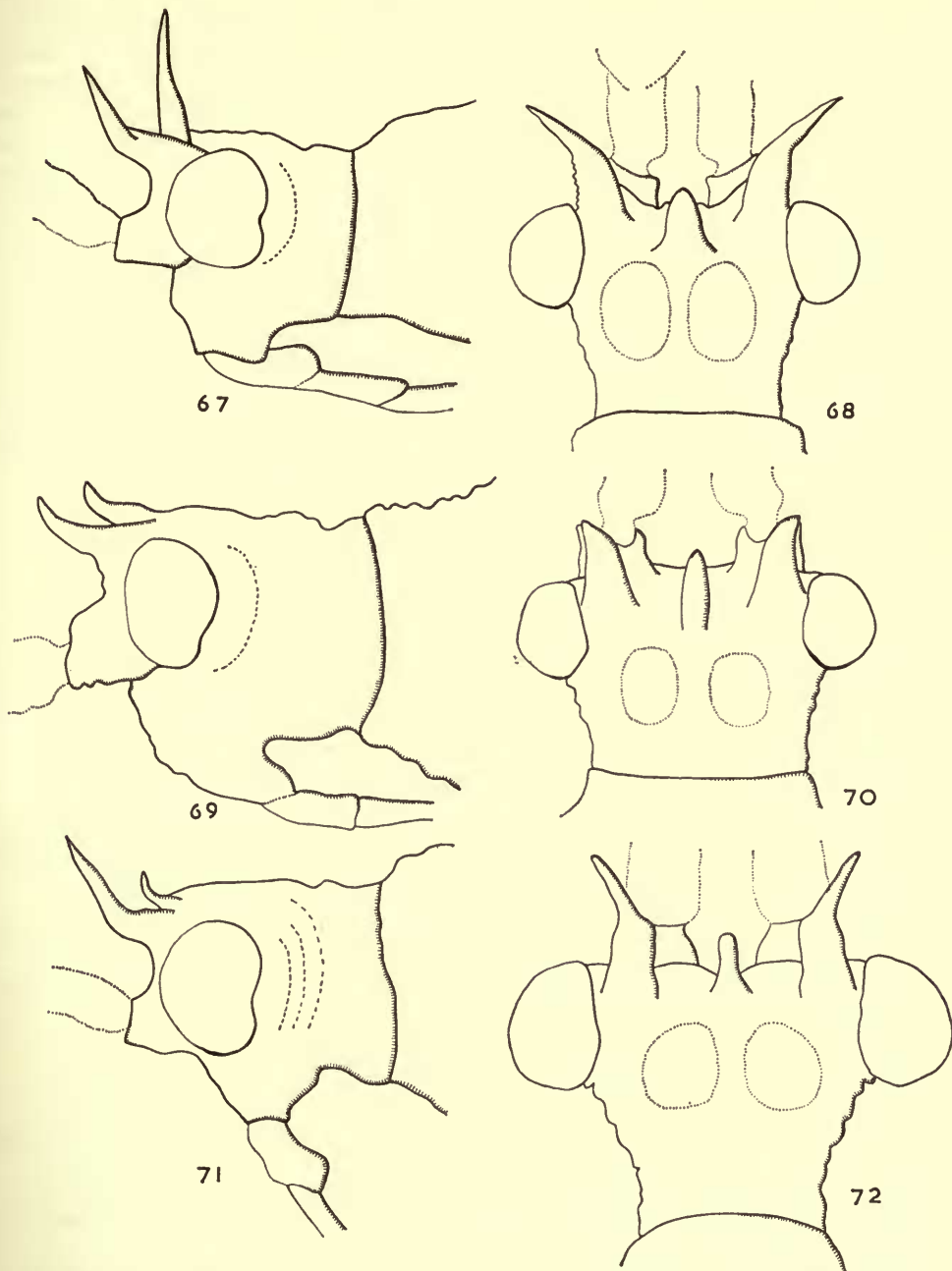
Re-descriptions of most of the species are given in the following pages.

CHAMUS Distant

1904. *Chamus* Distant, *Ann. Mag. nat. Hist.* (7) **13** : 197.

1912. *Chamus* Distant; Poppius, *Acta Soc. Sci. fenn.* **41** (3) : 192.

RE-DESCRIPTION. Body moderately shiny ; with long, erect, pale hairs ; dorsum more or less densely tuberculate. Head vertical ; viewed from above appears triangular in shape, broader than long, with the broadest part in anterior position ; from in front appears much broader than long ; from the side appears longer than high. Frons with three spines ; apical portion of the two lateral ones directed upwards, the middle one also directed upwards except when very short. Vertex with two large, roundish or oval, callus-like areas, clearly delimited by a ridge and a furrow ; glabrous. Anteclypeus swollen, indistinctly separated from frons. Eyes prominent, widely separated from each other, placed at anterior lateral angles of head. Rostrum short, reaching apices of fore coxae. Antennae inserted near lower margin of eyes ; antennal sclerites very prominent, developed as hollow cylinder-like structures (covering the thin basal part of antennal segment I) ; segment I strongly incrassate, thickest part broader than an eye, basal uncovered portion equally thickened, apical portion much more thickened and spindle-shaped, this segment densely

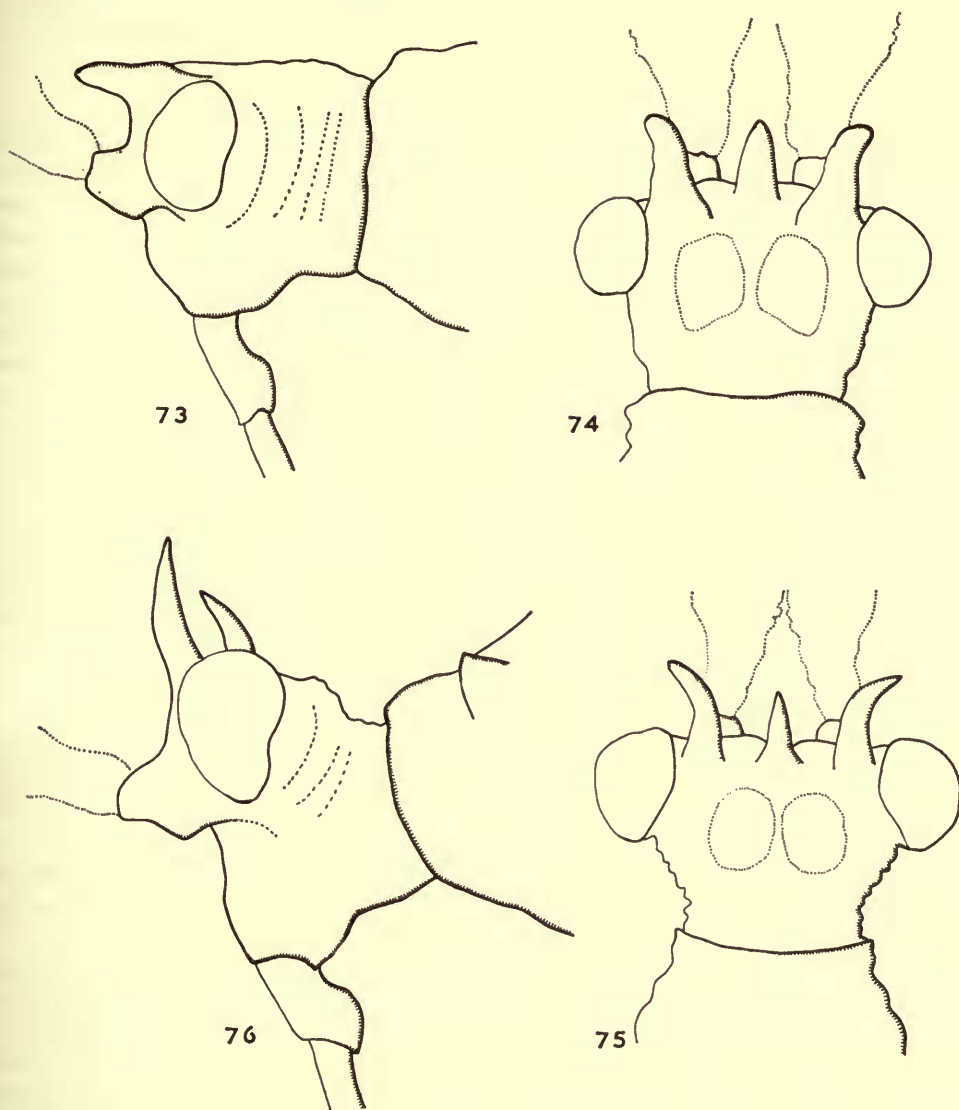


FIGS. 67-72. Structure of head, particularly that of frontal spines, in *Chamus* Distant. (Pubescence and sculpturing not shown.) 67, lateral aspect in *C. wealei* Distant; 68, the same: dorsal aspect; 69, lateral aspect in *C. incertus* Reuter & Poppius; 70, the same: dorsal aspect; 71, lateral aspect in *C. conradsonianus* Schouteden; 72, dorsal aspect in *C. mefisto* Reuter & Poppius.

covered with long pointed scales arising from tubercles ; remaining segments thinner, with short sub-erect pale hairs and very long erect hairs, the latter twice as long as or longer than segmental thickness. Pronotum with posterior margin almost straight, much broader than anterior margin, broader than median length of disc ; disc tuberculate and carrying very long erect hairs, much more sparsely tuberculate than on anterior lobe ; calli non-tuberculate but irregularly swollen, also reaching sides of pronotum, but widely separated from each other ; posterior lobe convex. Scutellum a little broader than long ; with a semi-circular, shallow depression at base. Hemelytra somewhat flattened, with tubercles carrying long erect hairs, shorter sub-erect hairs also present ; corium with outer margin sinuate, strongly widened towards apex ; embolium relatively broad ; cuneus a little longer than wide ; membrane with a sharply angular vein, membrane and metathoracic wings very densely covered with very short adpressed pale hairs. Legs shaggy, densely covered with very long pale hairs, those on hind tibiae extremely long ; fore tibiae with a distinct terminal spur (Text-fig. 77) ; first two tarsal claws together distinctly shorter than the third. Type-species : *Chamus wealei* Distant.

KEY TO SPECIES OF *Chamus*

1. Hemelytral membrane with a large red band encircling apical angle of the cell, and a large red spot near middle of the latter 2
- Membrane without such red markings, or with only a small obscure red spot near apical angle of the cell 4
2. Median spine on frons long, reaching anterior level of lateral pair of spines. (Congo) *C. overlaeti* Schouteden
- Median spine on frons minute, or much shorter than the lateral pair 3
3. Lateral spines on frons with the thin apical portion directed sharply upwards ; antennal segment II twice as long as segment I ; hemelytra non-tuberculate. Pronotum with more than basal half of posterior lobe non-tuberculate. (Togo, Bambari, Kenya) *C. mefisto* Reuter & Poppius
- Lateral frontal spines somewhat curved outwards, not markedly directed upwards, antennal segment II less than twice as long as segment I ; hemelytra tuberculate. (Tanganyika) *C. reuteri* Poppius
4. Vertex about four times as wide as an eye ; scutellum, and also hemelytral membrane in the middle, fuscous. (Tanganyika) *C. schroederi* Poppius
- Vertex about three (or less) times as wide as an eye ; scutellum and membrane yellowish 5
5. Tubercles on pronotum of uniform size ; lateral spines on frons with the upwardly curved portion abruptly much thinner than the basal portion, median spine about half as long as lateral spine ; antennal segment IV about as long as segment I. (Ukerewe Is. (L. Victoria), Uganda) *C. conradsianus* Schouteden
- Pronotum with a dense covering of granulose tubercles and some distinctly larger, scattered tubercles ; lateral frontal spines more or less uniformly tapering to apices, median spine subequal to or a little shorter than lateral spine ; antennal segment IV shorter than segment I 6
6. Median frontal spine vertically curved upwards, lateral spines when viewed in profile as long as an eye is high ; on pronotum only the large tubercles are red. (S. Africa, Ukerewe Is., Congo) *C. wealei* Distant
- Median frontal spine weakly inclined upwards, lateral spines much shorter than eye is high ; the large tubercles and most granulose tubercles on pronotum red. (South Africa) *C. incertus* Reuter & Poppius



FIGS. 73-76. Structure of head, particularly that of frontal spines in *Chamopsis* Reuter & Poppius and *Parachamus* Schouteden. (Note: pubescence and sculpturing not shown.) 73, lateral aspect in *C. conradti* Reuter & Poppius; 74, the same: dorsal aspect; 75, dorsal aspect in *C. tuberculatus* (Distant); 76, lateral aspect in *P. bellus* (Distant).

Chamus wealei Distant

(Text-figs. 67, 68, 80-82)

1904. *Chamus wealei* Distant, *Ann. Mag. nat. Hist.* (7) **13** : 197.1942a. *Chamus ghesquierei* Schouteden, *Rev. Zool. Bot. afr.* **36** (1) : 88 (syn. n.).

MALE. Structure. Head, including frontal spines, with long bristly hairs, those on vertex directed mostly backwards ; head across eyes about $1\frac{1}{2}$ times as long as median length of head (including neck, but excluding frontal spines) ; vertex about $2\frac{1}{2}$ times as wide as an eye (34 : 13) ; eyes large, round ; lateral frontal spines directed forwards and then recurved sharply upwards, when viewed from the side about as long as an eye is high ; median frontal spine curved upwards, about as long as the lateral pair of spines (Text-figs. 67 and 68). Antennal segment I about as long as width of head ; relative lengths of segments, 10 : 20 : 12 : 7. Pronotum distinctly wider across humeral angles than long in the middle (29 : 20), and nearly three times as wide as across anterior collar (29 : 11) ; surface densely granulosely tuberculate, also with much larger sparsely distributed tubercles ; hairs arising from the granulose tubercles short and depressed, those from the large tubercles very long and sub-erect, all hairs posteriorly directed. Scutellum shiny, with tubercles carrying very long seta-like hairs ; short hairs also present. Hemelytra moderately densely covered with setigerous tubercles, particularly on clavus, apical half of corium, and inner one-third of cuneus ; long, backwardly directed hairs arising from tubercles and also present along external margin, hemelytra also densely covered with short depressed pubescence ; embolium slightly translucent. Genitalia illustrated in Text-figs. 80-82. Length of body 5.85 mm., width across humeral angles 1.51 mm.

Colour. General colour yellowish or stramineous, with reddish markings. Tubercles on antennae and body red, granulose tubercles yellowish. Pubescence yellowish-white, those on antennal segment I yellowish-brown or fuscous. Suffusions on posterior part of head, frontal spines extensively or largely, eyes, clavus irregularly, more than distal one-third of corium, suffusions on inner lateral margin of cuneus, membranal vein, sometimes a small obscure spot near apical angle of the cell, and sometimes irregular markings on abdomen, all reddish.

FEMALE. Structure. Vertex about three times as wide as an eye (38 : 13). Pronotum wider across humeral angles than long in the middle (34 : 22), and nearly three times as wide as across anterior collar (34 : 12). Relative lengths of antennal segments, 13 : 23 : (III and IV broken). Length of body 6.25 mm., width across humeral angles 1.71 mm. Otherwise, structure as in the male.

Colour. Similar to that of the female, except : specimen from Zululand with darker reddish markings on apical half of corium.

MATERIAL EXAMINED. SOUTH AFRICA : Cape Colony, 1 ♀ (M. Weale) (Holotype) ; Pondoland, Port St. John, 1 ♂, ix.1923 (R. E. Turner) ; Zululand, Empangeni, 1 ♀, 26.iv.1926 (R. E. Turner). All in B.M. EAST AFRICA : Ukerewe Is. in L. Victoria, 2 ♂ (Father Conrads). Returned to the Coryndon Museum, Kenya. CONGO : Rutshuru, 1 ♂, 16.iv.1937 (J. Ghesquière) (Holotype of *C. ghesquierei*). Returned to Musée du Congo, Belgium.

The type of *C. ghesquierei*, deposited in the Musée du Congo in Tervuren, was examined and there is no doubt that it belongs to *C. wealei*. The latter species resembles *Chamopsis tuberculatus* (Distant) in its type of sculpturing on the pronotum and hemelytra, but it is otherwise easily differentiated.

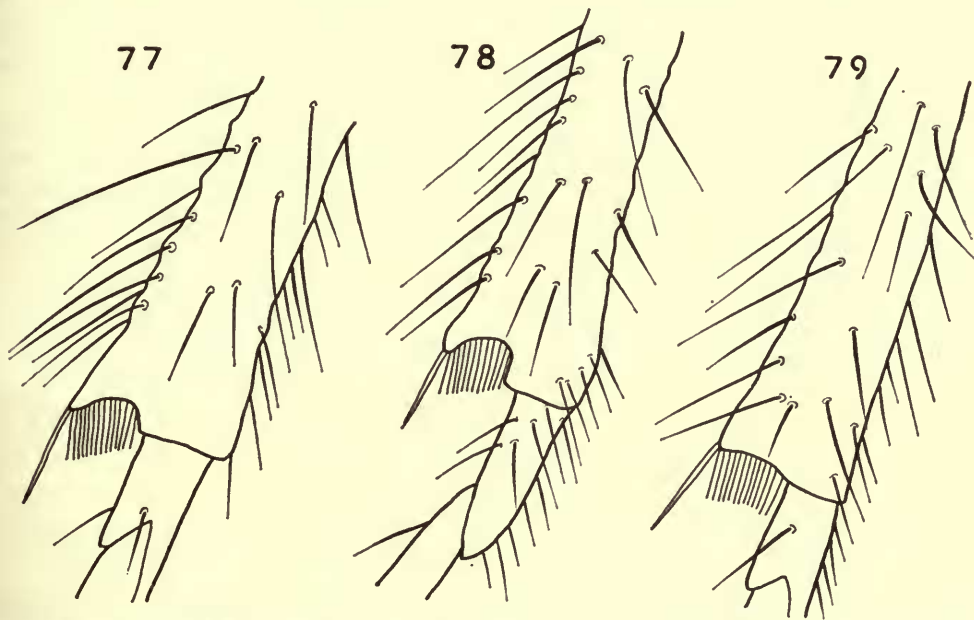
***Chamus incertus* Reuter & Poppius**

(Text-figs. 69, 70, 77, 83-85)

1911. *Chamus incertus* Reuter & Poppius, *Trans. R. ent. Soc. Lond.* **1911** : 414 ; pl. 32, fig. 5.

1912. *Chamus incertus* Reuter & Poppius ; Poppius, *Acta Soc. Sci. fenn.* **41** (3) : 193.

MALE. Structure. Head, including frontal spines, with long erect hairs, those on vertex directed mostly backwards ; head across eyes about $1\frac{1}{2}$ times as wide as it is



FIGS. 77-79. Shape of terminal spur on fore tibia. 77, in *Chamus incertus* Reuter & Poppius ; 78, in *Chamopsis conradti* Reuter & Poppius ; 79, in *Parachamus bellus* (Distant).

long in the middle (including neck, but excluding frontal spines) ; vertex more than $2\frac{1}{2}$ times as wide as an eye (32 : 12) ; eyes large, round ; lateral spines on frons only gently recurved upwards apically, when viewed from the side much shorter than an eye is high, from above nearly as long as an eye ; median spine only slightly inclined upwards, somewhat shorter than the lateral spines (Text-figs. 69-70). Antennal segment I about as long as width of head ; relative lengths of segments, 19 : 34 : 23 : (IV broken). Pronotum much wider across humeral angles than long in the middle (30 : 20), and nearly three times as wide as across anterior collar

(30 : 11) ; surface densely reticulately tuberculate, also with a few scattered but much larger tubercles ; the latter with very long sub-erect hairs, otherwise surface densely covered with short depressed or sub-erect hairs, most hairs directed posteriorly. Scutellum shiny, with a few scattered granulose tubercles carrying very long hairs, short hairs also present, all hairs directed backwards. Hemelytra moderately densely and uniformly covered with large setigerous tubercles, except apical half of cuneus, the setae very long and posteriorly directed ; a dense, short, depressed pubescence also present. Genitalia illustrated in Text-figs. 83-85. Length of body 5.4 mm., width across humeral angles 1.62 mm.

Colour. General colour of dorsum red. Pubescence pale in colour, yellowish-white or whitish, those on antennal segment I brownish with yellowish bases. Callus-like areas on vertex, frons, anteclypeus, ventral part of head, apex of antennal segment I, segments II and III wholly, base and apex of segment IV narrowly, irregular markings on pronotum, about basal half of embolium, external margin of cuneus, membrane, and legs, all yellowish or stramineous. Scutellum reddish-yellow. A band starting from inner basal angle of cuneus, continuing on to exocorium, and stopping one-third of the way from apex of corium, fuscous. Venter yellowish, suffused with red.

FEMALE. Structure. Vertex three times as wide as an eye (37 : 12). Relative lengths of antennal segments, 22 : 36 : 24 : 14. Pronotum much wider across humeral angles than long in the middle (35 : 22), and three times as broad as across pronotal collar (35 : 12). Length of body 6.65 mm., width across humeral angles 1.89 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. SOUTH AFRICA : Cape Province, Mossel Bay, 2 ♀, iv. 1921 ; 1 ♂, 1 ♀, 18-30. xi. 1921 ; 1 ♂, xii. 1921 ; 1 ♀, ii. 1922 (R. E. Turner). In B.M.

Chamus mefisto Reuter & Poppius

(Test-figs. 72, 86-89)

1911. *Chamus mefisto* Reuter & Poppius, *Trans. R. ent. Soc. Lond.* **1911** : 414 ; pl. 32, fig. 6.

1912. *Chamus mefisto* Reuter & Poppius ; Poppius, *Acta Soc. Sci. fenn.* **41** (3) : 194.

MALE. Structure. Head and frontal spines with very long erect hairs ; head across eyes nearly $1\frac{3}{4}$ times as wide as it is long in the middle (including neck, but excluding frontal spines) ; vertex about twice as wide as an eye (38 : 18) ; eyes very large, round ; lateral pair of frontal spines with basal half thick and inclined forwards, distal half vertical and much thinner, when viewed from the side about two-thirds as long as an eye is high ; median spine minute, hardly inclined upwards (Text-fig. 72). Antennal segment I very nearly as long as width of head ; relative lengths of segments, 22 : 45 : 30 : 16. Pronotum distinctly wider across humeral angles than median length (36 : 23), and three times as broad as across pronotal collar (36 : 12) ; surface with proximal half of posterior lobe shiny, devoid of tubercles or hairs ; distal half and sides with small, rather indistinct, tubercles carrying moderately short, sub-erect hairs ; calli more or less smooth ; some long hairs on anterior half of pronotum ; all hairs posteriorly directed. Scutellum smooth, shiny, densely

covered with moderately long, sub-erect hairs. Hemelytra shiny, without distinct tubercles, densely covered with short, depressed hairs and some long, posteriorly directed hairs; cuneus about twice as long as wide. Genitalia illustrated in Text-figs. 86–89. Length of body 7.45 mm., width across humeral angles 1.89 mm.

Colour. General colour of dorsum red. Frons sometimes, the thin apical portion of lateral frontal spines, lateral parts of head below, anteclypeus, rostrum, base, inner middle and apex of antennal segment I, the remaining segments, a median streak on pronotum, posterior margin of pronotum, an inverted U-shaped band or more extensive area on the latter, a large area on middle of clavus, two large irregular markings on corium, middle two-fifths of embolium, also cuneus and membrane, all yellowish. Sides of pronotum and scutellum broadly, sometimes base of corium, and apex of corium broadly, dark red or fuscous. Base of cuneus narrowly, vein on membrane, a large spot near middle of the cell, and sometimes a band round apical angle of cell, red. Venter and legs yellowish or stramineous. Pubescence pale yellowish or white; those on antennal segment I pale, yellowish or sometimes tinged with brown, those towards base of segment more brownish.

FEMALE. Structure. Vertex more than twice as wide as an eye (41 : 18). Relative lengths of antennal segments, 23 : 47 : 29 : 14. Relative dimensions of width of pronotum across humeral angles, median length of pronotum, and width of pronotal collar, 30 : 19 : 9. Length of body 8.35 mm., width across humeral angles 2.16 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. WEST AFRICA: Bambari, 2 ♂, 22.iv.1953 (Received from J. Carayon). In B.M. EAST AFRICA: Kenya, Nairobi, 1 ♂, 6.xi.1920 (A. F. J. Gedye); 1 ♀, 13.xi.1957 (R. Carcasson). Limuru, 2 ♀, v.1935. Returned to the Coryndon Museum, Kenya.

The male is described for the first time.

Chamus conradsianus Schouteden

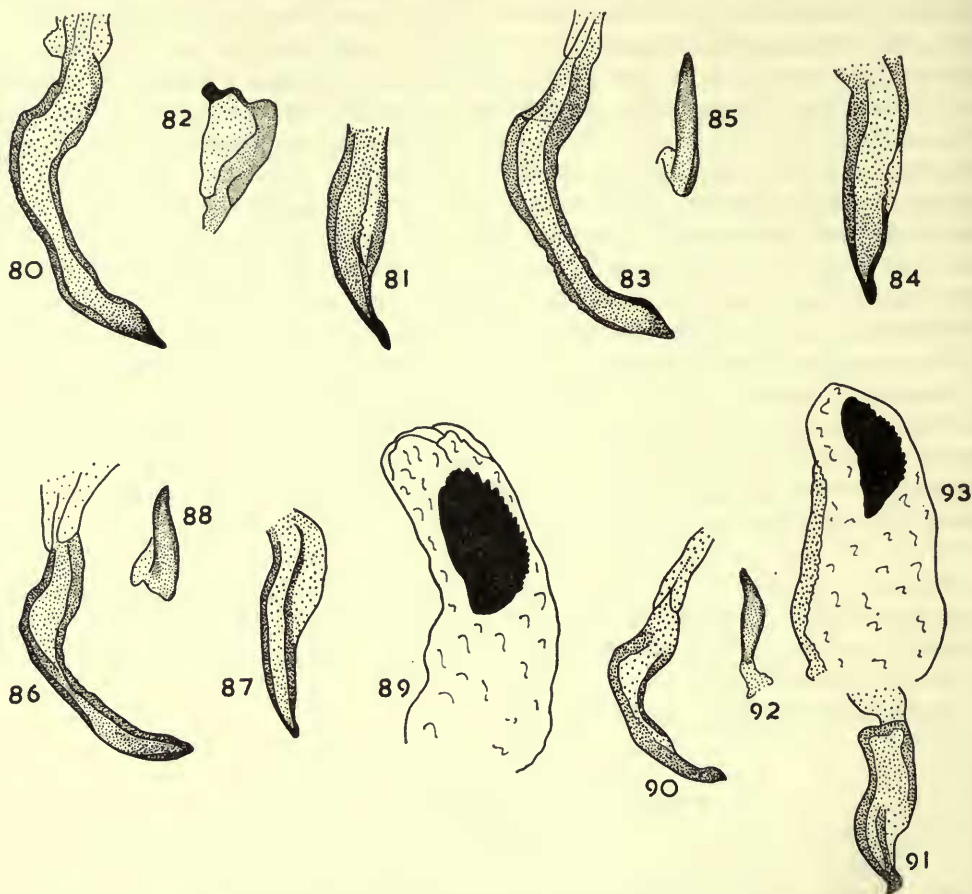
(Text-figs. 71, 90–93)

1942a. *Chamus conradsianus* Schouteden, *Rev. Zool. Bot. afr.* 36 (1) : 87.

Characterized by the relatively short first antennal segment, the structure of the frontal spines, the type of tuberculations on the dorsum, the structure of the tarsal claws, and by the colour, especially that of the tubercles and the sub-erect hairs.

MALE. Structure. Head and frontal spines with long erect hairs, those on vertex mostly directed backwards; head across eyes twice as wide as it is long in the middle (including neck, but excluding frontal spines); vertex twice as broad as an eye (32 : 16); eyes moderately large, round; lateral pair of frontal spines with basal half thick and inclined forwards, distal half sharply directed upwards and much thinner, viewed from the side a little longer than an eye is high; median frontal spine about half as long as the lateral pair, basal portion thickened and conical in shape, distal portion much thinner and sharply curved upwards (Text-fig. 71). Antennal segment I distinctly shorter than width of head (16 : 21); relative lengths

of segments, 16 : 37 : 24 : 15. Pronotum much wider across humeral angles than it is long in the middle (31 : 19), and three times as wide as across pronotal collar (31 : 10); surface densely covered with uniformly prominent tubercles carrying



FIGS. 80-93. Male genitalia in *Chamus* Distant. 80-82: *C. wealei* Distant. 80, left paramere; 81, the same: internal aspect of apex; 82, right paramere. 83-85: *C. incertus* Reuter & Poppius. 83, left paramere; 84, the same: internal aspect of apex; 85, right paramere. 86-89: *C. mefisto* Reuter & Poppius. 86, left paramere; 87, the same: inner aspect of apex; 88, right paramere; 89, aedeagus. 90-93: *C. conradsonianus* Schouteden. 90, left paramere; 91, the same: inner aspect of apex; 92, right paramere; 93, aedeagus.

rather long posteriorly directed hairs, a narrow area along posterior margin devoid of tuberculations. Scutellum weakly tuberculate; pubescence similar to that on pronotum. Hemelytra with low, scattered tubercles of uniform size on clavus, endocorium, apical one-third of corium, and inner basal half of cuneus; tubercles carrying rather long, posteriorly directed, sub-erect hairs; shiny white adpressed

pubescence also present. Tarsal claws with a rather distinct tooth. Genitalia illustrated in Text-figs. 90-93. Length of body 6.35 mm., width across humeral angles 1.66 mm.

Colour. General colour brownish-red. Adpressed pubescence shiny white; erect hairs brownish-yellow, those on antennal segments III and IV, sides and apical portion of pronotum, and apical one-third of corium, brownish or fuscous; scales on antennal segment I fuscous to black. Callus-like areas on vertex, frons or more extensively on anterior part of head, apical half of frontal spines, rostrum, antennal segments II and III, basal margin of pronotum broadly, scutellum largely, claval sutures narrowly, a triangular area on corium (excluding base and apical one-third), embolium (excluding base and apical one-third), cuneus (except inner basal angle and inner lateral margin), membrane, and legs, pale yellow. Basal lobe of pronotum, clavus, and apical one-third of corium sometimes, dark red. Tubercles concolorous. Venter yellowish, suffused with red.

FEMALE. Structure. Vertex more than twice as wide as an eye (36 : 14). Relative dimensions of pronotum across humeral angles, median length of pronotum, and width of pronotal collar, 36 : 19 : 11. Length of body 7.95 mm., width across humeral angles 1.87 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male, except: general colour of specimen from Ukerewe Is. distinctly red.

MATERIAL EXAMINED. EAST AFRICA: Ukerewe Is. on Victoria Nyanza, 1 ♀, v.1938 (R. P. Conrads) (Holotype); returned to the Musée du Congo, Tervuren, Belgium. Uganda, Kawanda, 3 ♂, 4 ♀ on *Tetracera potatoria* leaves, xi.1954 (M. Magala); same data, 1 ♀, 8.xii.1954 (M. Magala); 1 ♂ on *Erythrina*, 3.vii.1958 (T. R. Odhiambo). Three returned to Kawanda Research Station, the rest in B.M.

In the structure of the tarsal claws, and in the relatively short first antennal segment, *C. conradsianus* approaches the genus *Chamopsis*. However, it is not otherwise similar to *Chamopsis tuberculatus*, as implied in Schouteden's original description (Schouteden, 1942:87). *C. conradsianus* is, in fact, closely allied to *C. schroederi*, from which it may be separated by the colour, the structure of the head, vertex, antennae, and pronotum, and by the type of tuberculations on the dorsum. Like *C. mefisto*, the vesica has a chitinized structure (Text-fig. 93).

Chamus overlaeti Schouteden

1942. *Chamus overlaeti* Schouteden, *Rev. Zool. Bot. afr.* 36 (1) : 88.

FEMALE. Structure. Head and frontal spines with very long, erect bristles; head across eyes slightly more than twice as broad as it is long in the middle (including neck, but excluding frontal spines); vertex $2\frac{1}{2}$ times as wide as an eye (43 : 17); eyes very large, round; lateral frontal spines curved outwards apically, almost horizontal, only very slightly directed upwards at apex; median frontal spine long, reaching anterior level of lateral spines, a little more distinctly directed upwards, viewed from above about three-quarters as long as an eye. Antennal segment I a little shorter than width of head; relative lengths of segments, 23 : 48 : (III and IV missing). Pronotum across humeral angles more than $1\frac{1}{2}$ times as wide as long in

the middle (31:19), and three times as wide as across pronotal collar (31:10); posterior lobe densely covered with coarse tubercles of uniform size, except a small non-tuberculate area near posterior margin; disc with very long sub-erect hairs, the latter as long as those on head, those along margins rather shorter. Scutellum and hemelytra (including cuneus) with large, rather indistinct, setigerous tubercles, also covered with very long sub-erect hairs, directed backwards, and shiny white depressed pubescence; cuneus about two-thirds as broad as it is long.

Colour. General colour of dorsum red. Anteclypeus, sides of head below, rostrum, some markings on antennal sclerites, apex of antennal segment I, segment II, a triangular area between and in front of pronotal calli, the non-tuberculate semi-circular area near posterior margin of pronotum, scutellum extensively, irregular markings on embolium, irregular spots on apical half of corium, cuneus wholly except for base and a streak near apex of membranal cell, and membrane, all yellowish. Membranal vein, a large spot near middle of the cell, and a band encircling apical angle of the cell, carmine red. A streak along embolio-corial boundary, and a band at apex of corium, dark reddish-brown. Venter and legs yellowish; dorsal margin of venter, and last visible abdominal segments, reddish. Hairs pale yellow, those on antennal segment I black.

MALE. Unknown.

MATERIAL EXAMINED. CONGO: Lulua, Sandoa, 1 ♀, v.1932 (F. G. Overlaet) (Holotype). Returned to Musée du Congo, Tervuren.

C. overlaeti is very similar to *C. mefisto* in general facies, but it may be distinguished in that: (1) the frontal spines are only weakly directed vertically; (2) the median frontal spine is much longer than in *C. mefisto*; (3) the lateral spines have a much thinner apical portion, in contrast to those in *C. mefisto*, in which the apical portion is abruptly slender; (4) the dorsum is more extensively covered with tubercles, which are in addition distinctly coarser; and in that (5) the head and dorsum are less extensively yellowish. Reference may also be given to Schouteden's 1942a paper, in which he compiled a long list of differences between *C. overlaeti* and *C. reuteri*, which he regards as closely related.

CHAMOPSIS Reuter & Poppius

1911. *Chamopsis* Reuter & Poppius, *Trans. R. ent. Soc. Lond.* **1911**: 416.
 1912. *Chamopsis* Reuter & Poppius; Poppius, *Acta Soc. Sci. fenn.* **41** (3): 195.
 1944. *Chamopsis* Reuter & Poppius; China, *Bull. ent. Res.* **35** (2): 174.

RE-DESCRIPTION. Dorsum covered with tubercles, from which arise moderately long hairs, mostly directed posteriorly. Head vertical, anterior part broadest; viewed from above and from in front appears distinctly broader than long, from the side about as long as high. Frons with three spines, all uniformly tapering towards apex; lateral pair recurved outwards, horizontally; median spine hardly inclined upwards. Vertex with two large oval callus-like areas, delimited by a furrow and a ridge, glabrous; anteclypeus swollen, indistinctly separated from frons. Eyes prominent, widely separated from each other, placed at anterior lateral angles of head. Rostrum slightly surpasses apices of fore coxae. Antennae inserted close

to lower margin of eyes ; antennal sclerites very prominent, cylinder-like structures enveloping base of segment I ; segment I strongly incrassate, distinctly shorter than width of head, basal uncovered portion more or less uniformly thickened, apical portion thickest and spindle-shaped, the latter broader than an eye, the segment densely covered with long pointed scales arising from tubercles ; the rest of antennae thinner than segment I, non-tuberculate, densely covered with depressed pubescence and scattered, rather long hairs, the latter less than twice as long as antennal thickness. Pronotum covered uniformly with setigerous tubercles ; calli non-tuberculate, but irregularly swollen, widely separated from each other, reaching sides of pronotum ; posterior lobe convex, posterior margin nearly straight. Scutellum somewhat broader than long, with a semi-circular shallow depression at base. Hemelytra somewhat flattened, with setigerous tubercles ; embolium relatively broad ; cuneus a little longer than wide ; membrane with an angular vein, very densely covered with minute pale pubescence. Legs densely hairy, hairs on tibiae very long ; anterior tibia with a distinct terminal spur (Text-fig. 78) ; first two tarsal claws together as long as, or slightly longer than, third segment ; claws with a large basal tooth. Type-species : *Chamopsis conradti* Reuter & Poppius.

***Chamopsis conradti* Reuter & Poppius**

(Text-figs. 73, 74, 78, 94-96)

1911. *Chamopsis conradti* Reuter & Poppius, *Trans. R. ent. Soc. Lond.* **1911** : 416 ; pl. 32, fig. 7.
 1912. *Chamopsis conradti* Reuter and Poppius ; Poppius, *Acta Soc. Sci. fenn.* **41** (3) : 195.
 1944. *Chamus boxi* China, *Bull. ent. Res.* **35** (2) : 180, fig. 9 (**syn. n.**).

Despite much enquiry in German museums the type of *C. conradti* has not been found. (It should have been in "Mus. Berol." i.e. Berlin Museum). It seems, therefore, that the original type is lost. Nevertheless, after carefully comparing the type material of China's species, *Chamus boxi*, with Poppius' re-description of *C. conradti*, the present writer has come to the conclusion that not only should China's species be transferred to the genus *Chamopsis*, but that it is synonymous with *C. conradti*.

There is no need to re-describe *C. conradti* anew, as China's description and figures, and the coloured plate provided by Reuter & Poppius should enable the species to be recognized easily. It may be added, however, that in this species the hemelytra are almost parallel-sided, and that the corium is not sinuate laterally.

MATERIAL EXAMINED (other than China's type material). EAST AFRICA : Uganda, Kawanda, 1 ♀ on *Erythrina micropteryx*, 7.ix.1956 (McNutt) ; 2 ♀ on *Combretum abbreviatum*, 18.iv.1959 (M. Magala). One in B.M., two returned to Kawanda Research Station.

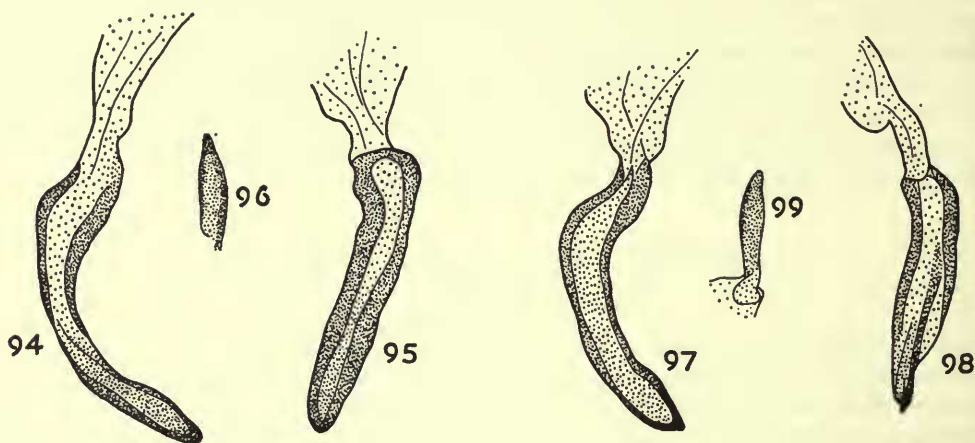
***Chamopsis tuberculatus* (Distant) comb. n.**

(Text-figs. 75, 97-99)

1918. *Chamus tuberculatus* Distant, *Bull. ent. Res.* **9** : 73.

MALE. *Structure*. Dorsum densely covered with adpressed pubescence. Head across eyes nearly twice as wide as it is long in the middle (excluding frontal spines) ; vertex

nearly twice as wide as an eye (27 : 14) ; eyes rather large, round ; median spine on frons reaching level of lateral pair, or nearly so (Text-fig. 75). Antennal segment I shorter than width of head (14 : 18) ; relative lengths of segments, 14 : 29 : 20 : 13. Pronotum distinctly wider across humeral angles than it is long in the middle (26 : 17), and $2\frac{1}{2}$ times as wide as across pronotal collar (26 : 10) ; surface densely covered with small granulate tubercles and scattered large tubercles carrying rather long sub-erect hairs. Scutellum shiny, tuberculations nearly indistinct, with long sub-erect hairs. Hemelytra with some large, scattered, setigerous tubercles ; corium feebly sinuate laterally. Genitalia illustrated in Text-figs. 97-99. Length of body 5.0 mm., width across humeral angles 1.37 mm.



FIGS. 94-99. Male genitalia in *Chamopsis* Reuter & Poppius. 94-96: *C. conradti* Reuter & Poppius. 94, left paramere ; 95, the same : inner aspect ; 96, right paramere. 97-99: *C. tuberculatus* (Distant). 97, left paramere ; 98, the same ; inner aspect ; 99, right paramere.

Colour. General colour of dorsum dull, brownish tinged with red. Sub-erect hairs stramineous, those on the dark areas along inner margin of cuneus brown to fuscous, scales on antennal segment I brownish. Head reddish-brown ; callus-like areas on vertex, frontal spines largely, frons, anteclypeus, rostrum, and antennal segments II and III, stramineous ; antennal segment III towards base dusky ; segment IV dark red, base and apex narrowly yellowish. Pronotum and scutellum yellowish-brown ; sides of both base and apex of scutellum, darker ; the large tubercles on pronotum dark. Hemelytra yellowish-brown ; base and apex of clavus, a broad band in the middle of the latter and on endocorium, also base of endocorium, apical one-third of corium (except lateral apical angle), inner basal angle of cuneus, and large irregular areas on membrane, fuscous, sometimes with reddish suffusion ; membranal vein red. Venter and legs flavescent, sides of thorax and abdomen dark reddish-brown.

FEMALE. Structure. Vertex somewhat more than twice as wide as an eye (30 : 13). Relative lengths of antennal segments, 14 : 30 : 22 : 12. Relative dimensions of

width of pronotum across humeral angles, median length of pronotum, and width of pronotal collar, 29 : 17 : 11. Length of body 5.9 mm., width across humeral angles 1.55 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. CONGO : Kumulu, 1 ♂ off guava, 30.ix.1917 (R. Mayne) (Holotype) ; 2 ♂, 3 ♀, same data as above. All in B.M. EAST AFRICA : Uganda, Kampala and Kawanda, many specimens on guava and collected at mercury-vapour light. Ukerewe Is. (on L. Victoria), 1 ♂, 1 ♀ (Father Conrads). Returned to Coryndon Museum, Kenya. WEST AFRICA : Sierra Leone, Freetown, 1 ♀ on guava, 26.vii.1915 (E. Hargreaves). Nigeria, Awgu, 2 ♂, 3 ♀ nymphs on *Alchornea cordifolia*, 4.i.1944 (H. E. Box). In B.M.

As a result of the present studies, this species has been transferred to the genus *Chamopsis*.

PARACHAMUS Schouteden

1946. *Parachamus* Schouteden, *Rev. Zool. Bot. afr.* **39** (3) : 282.

1952. *Parachamus* Schouteden ; Villiers, *Hem. Afr. Noire* : 187.

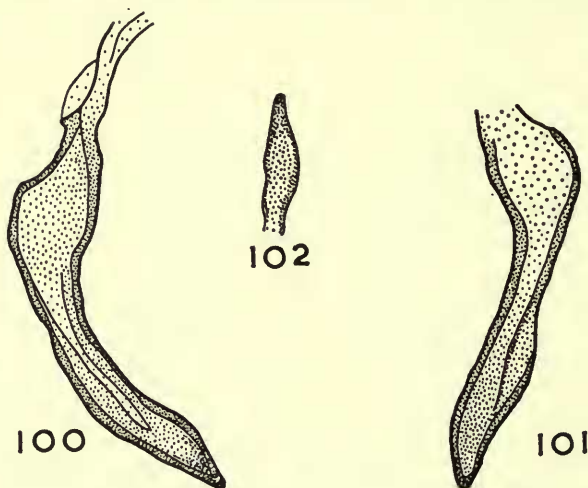
RE-DESCRIPTION. Dorsum very shiny. Seta-like hairs mostly directed posteriorly. Head viewed from above and from in front very strongly transverse, from the side higher than long ; head (including frons) with a few scattered seta-like long hairs ; head with a distinct neck. The three spines on frons curved vertically upwards (Text-fig. 76). Vertex with two large, glabrous, roundish, callus-like flattened areas, indistinctly delimited by a thin ridge, separated from each other by a shallow depression in the middle ; anteclypeus swollen, indistinctly marked off from frons. Eyes very prominent, widely separated from each other. Rostrum short, extending to apices of anterior coxae. Antennae inserted near lower margin of eyes ; the cylinder-like antennal sclerites very prominent, covering base of segment I ; segment I thickened (as in *Chamus*), about as long as width of head, covered very densely with long pointed scales arising from tubercles, a portion of the segment between the narrow basal part and the thicker distal part smooth and glabrous ; remaining segments thinner ; pubescence on the latter about as long as, or a little longer than, antennal thickness. Pronotum with anterior lobe much narrower than posterior lobe ; the latter convex, with two large protuberances located towards basal lateral angles ; calli conical in shape ; otherwise, disc almost non-tuberculate, and very sparsely hairy. Scutellum swollen, broader than long, with a shallow semi-circular depression near base. Hemelytra somewhat flattened, sparsely covered with setigerous tubercles, depressed pubescence on clavus and apical one-third of corium ; outer margin of corium sinuate ; cuneus somewhat longer than broad ; membrane very densely covered with minute pale pubescence, vein angular apically. Legs shaggy, tibiae with very long setae ; anterior tibia without a distinct terminal spur (Text-fig. 79) ; first two tarsal segments together longer than third segment ; claw without a distinct tooth. Type-species : *Parachamus bellus* (Distinct).

Parachamus bellus (Distant)

(Text-figs. 76, 79, 100-102)

1918. *Chamus bellus* Distant, *Bull. ent. Res.* 9 : 72, fig. 3.1946. *Parachamus bellus* (Distant) Schouteden, *Rev. Zool. Bot. afr.* 39 (3) : 283.1952. *Parachamus bellus* (Distant) ; Villiers, *Hem. Afr. Noire* : 187, fig. 262.

MALE. *Structure.* Dorsum sparsely covered with moderately long, seta-like hairs. Head across eyes more than twice as broad as long ; vertex three times as wide as an eye (22 : 7) ; spines on frons uniformly taper towards apex, lateral pair about as long as an eye is high when viewed from the side, median spine shorter (Text-fig. 76). Relative lengths of antennal segments, 23 : 37 : 23 : 10. Pronotum much wider



FIGS. 100-102. Male genitalia in *Parachamus bellus* (Distant). 100, left paramere ; 101, the same : inner aspect ; 102, right paramere.

across humeral angles than it is long in the middle (33 : 19), and three times as wide as across pronotal collar (33 : 11). Tubercles on hemelytra of more or less uniform size, most of these on clavus and apical one-third of corium. Genitalia illustrated in Text-figs. 100-102. Length of body 5.55 mm., width across humeral angles 1.67 mm.

Colour. Head, pronotum, scutellum, and their protuberances, fuscous to black ; sides of head towards apex, rostrum, antennal segments II and III, and base and apex of segment IV narrowly, flavescent ; antennal segments I and IV very dark red ; pubescence on antennae concolorous, those on segment I fuscous. Hemelytra flavescent ; clavus dark reddish-brown, except for an irregular area near apex, tubercles and setae fuscous ; and apical one-quarter of corium, also inner basal angle of cuneus, reddish-brown ; tubercles on pale areas concolorous and their setae pale brownish-yellow, those on dark areas fuscous or black ; membranal vein orange-red. Venter and legs ochraceous, sides of thorax fuscous.

FEMALE. *Structure.* Relative lengths of antennal segments, 23 : 36 : 24 : 13. Relative dimensions of width of pronotum across humeral angles, median length of

disc, and width across pronotal collar, 32 : 18 : 10. Length of body 5.65 mm., width across humeral angles 1.69 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. CONGO : Eala, 1 ♂ off "Lionzi", 26.x.1917 (R. Mayne) (Holotype) ; 1 ♀, data as above (both probably teneral). In B.M. EAST AFRICA : Uganda, Kampala, 1 ♂, 1 ♀, iii.1935 ; nr. Kampala, 1 ♀ on *Alchornea* apparently feeding, 5.iii.1935 (all H. Hargreaves) ; Kawanda, 1 ♂, 27.ii.1954 (A. P. G. Michelmore). Two specimens returned to Kawanda Research Station. Ukerewe Is. (on L. Victoria), 6 ♂, 6 ♀ (Father Conrads). Four specimens returned to the Coryndon Museum, Kenya ; the rest in B.M.

LYCIDOCORIS Reuter & Poppius

1911. *Lycidocoris* Reuter & Poppius, *Trans. R. ent. Soc. Lond.* **1911** : 409.

1912. *Lycidocoris* Reuter & Poppius ; Poppius, *Acta Soc. Sci. fenn.* **41** (3) : 182.

RE-DESCRIPTION. Body elongate, with sides nearly parallel. Dorsum densely covered with sub-erect, posteriorly directed, moderately long hairs ; head, collar, and anterior lobe of pronotum, covered with erect hairs, those on head and pronotal collar sparse. Head smooth, shiny, strongly transverse, when viewed from the side somewhat shorter than high ; vertex with a roundish, shallow depression towards posterior margin ; frons inflated, projecting anteriorly between bases of antennae to about level of apices of antennal sclerites ; anteclypeus swollen, delimited from frons by a transverse depression. Eyes large, prominent, widely separated from each other, separated from anterior margin of pronotum by a distance about equal to thickness of pronotal collar. Rostrum short and thick, extending nearly to apices of fore coxae. Antennae inserted towards lower margin of eyes, segments thickened, very densely covered with sub-erect seta-like hairs, some of the latter erect ; segment I a little more than three times as long as thick, somewhat longer than vertex is wide ; segment II club-shaped distally ; segments III and IV spindle-shaped, segment III at least a little thicker than II, segment IV distinctly shorter than I. Pronotum very coarsely reticulately punctate, broader than long, posterior margin feebly sinuate, posterior lobe inclined anteriorly but scarcely convex, sides of anterior lobe more or less sinuate ; calli smooth, sharply delimited by a posterior furrow, calli extending to the sides of pronotum, confluent in the middle ; collar sharply separated off by a deep posterior furrow, flattened, less coarsely punctured than on pronotal disc. Scutellum a little longer than broad, coarsely reticulately punctured, in the middle with some ridges running in a more or less transverse direction between punctures, apex swollen and smooth. Hemelytra densely, irregularly, rugosely punctate ; embolium narrow ; cuneus much longer than broad, at least $1\frac{1}{2}$ times as long as broad ; membrane with several vein-like impressions extending from basal cell to apex of membrane in addition to the cubitus. Thoracic venter with elongated ostiolar peritreme. Legs shaggy, with very long bristles ; segments II and III of tarsi subequal, segment I longer. Type-species : *Lycidocoris mimeticus* Reuter & Poppius.

KEY TO SPECIES OF *Lycidocoris*

1. Setae on antennal segment II extremely long, about three times as long as thickness of the segment; anterior lobe of pronotum, also venter, entirely black. (Kenya) *L. crinatus* sp. n.
- Setae on antennal segment II shorter, at most only slightly longer than thickness of the segment; anterior lobe of pronotum as well as venter with at least some orange markings 2
2. Frons fuscous to black; lateral margins of anterior lobe of pronotum very prominent 3
- Frons flavescent to orange; lateral margins of anterior lobe of pronotum only slightly prominent 5
3. Tarsi entirely fuscous to black; frons projecting slightly beyond apices of antennal sclerites; vertex more than twice as wide as an eye 4
- Tarsi flavescent; frons reaching apices of antennal sclerites; vertex twice as wide as an eye. Antennal segment III about $1\frac{1}{2}$ times as thick as segment II. (Guinea) *L. simulans* sp. n.
4. Antennal segment III nearly $1\frac{1}{2}$ times as thick as segment II, which is slightly thicker than segment I; cuneus only a little longer than broad; pronotum and scutellum with a median narrow black band. (Northern Rhodesia) *L. tumidus* sp. n.
- Antennal segment III a little thicker than segment II, which is slightly thinner than segment I; cuneus about $1\frac{1}{2}$ times as long as broad; pronotum and scutellum with a broad black band, for the most part nine-tenths as wide as anterior margin of pronotum. (Uganda) *L. infulatus* sp. n.
5. Antennal segment II about five times as long as segment IV, and slightly thicker than segment I; setae on antennal segment II shorter than the segment is thick. (Cameroons, Togo, Ghana, Congo, Angola, Uganda, Tanganyika) *L. mimeticus* Reuter & Poppius
- Antennal segment II about four times as long as segment IV, and slightly thinner than segment I; a few setae near base of segment II a little longer than thickness of segment. (Ghana) *L. ghanaensis* sp. n.

Lycidocoris mimeticus Reuter & Poppius

(Text-figs. 103-106 and 123)

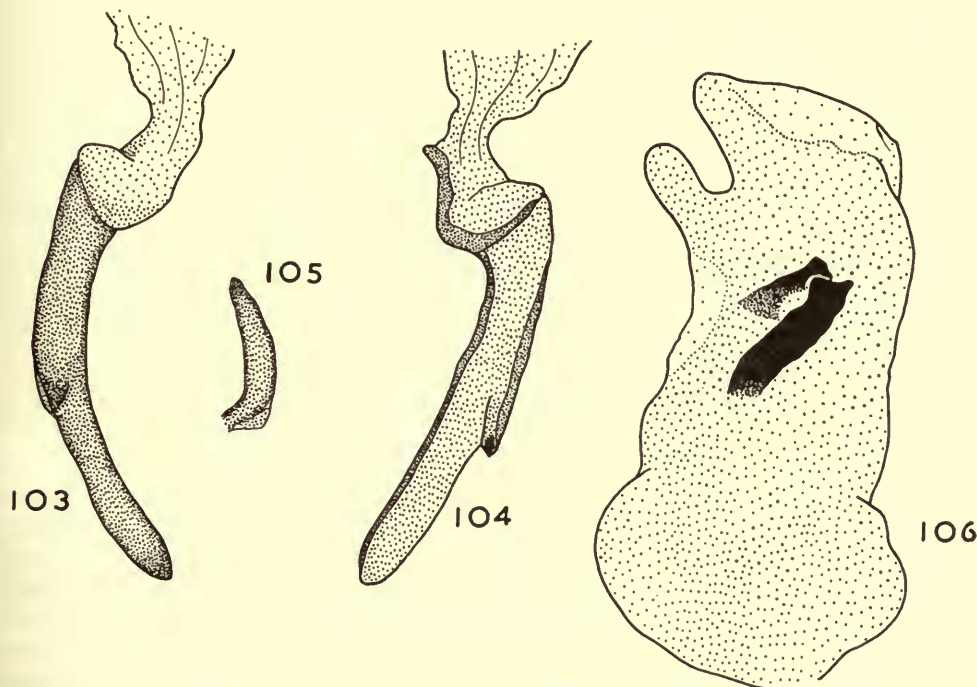
1911. *Lycidocoris mimeticus* Reuter & Poppius, *Trans. R. ent. Soc. Lond.* **1911** : 410; pl. 32, fig. 3.
1917. *Lycidocoris uniformis* Schumacher, *S. B. Ges. naturf. Fr. Berlin*, **1917** : 447 (syn. n.).
1942. *Lycidocoris mimeticus* Reuter & Poppius; Schouteden, *Rev. Zool. Bot. afr.* **36** (1) : 1-4 (description of varieties).

The two nominal species, *L. mimeticus* and *L. uniformis*, are both very variable species; and in fact, Schouteden (1942) has described several colour varieties. However, specimens standing over the name of "*L. uniformis*" in the British Museum collection definitely belong to *L. mimeticus*. And, as these specimens represent the coloration typical of *L. mimeticus* and *L. uniformis* (as described by Schumacher), it seems that the two species are conspecific. Furthermore, the characters given by Schumacher (1917) as distinguishing *L. uniformis* from *L. mimeticus* are not distinctive, viz.: (1) *L. uniformis* is smaller in size (there is no apparent difference in average size of the two species); (2) *L. uniformis* has more densely hairy antennae (there is no marked difference between the two species); (3) *L. uniformis* without a black band on pronotum and scutellum; (4) the last antennal segment partly

reddish-yellow ; and (5) the colour of the head and abdomen different from that in *L. mimeticus*. Actually, all gradations are found in colour markings between the two species. It is proposed, therefore, to sink *L. uniformis* as a synonym of *L. mimeticus*.

A re-description of the species follows.

MALE. Structure. Head across eyes twice as wide as it is long in the middle (39 : 19) ; vertex somewhat more than twice as wide as an eye (20 : 9) ; swollen projection of frons reaching apices of antennal sclerites. Relative lengths of antennal segments,



FIGS. 103-106. Male genitalia of *Lycidocoris mimeticus* Reuter & Poppius. 103 and 104, left paramere ; 105, right paramere ; 106, aedeagus.

25 : 76 : 51 : 15 ; segment II with setae shorter than thickness of segment ; the latter slightly thicker than segment I, segments II and III about equally thick. Pronotum about $1\frac{1}{2}$ times wider across humeral angles than it is long in the middle (73 : 51), and three times as wide as across pronotal collar (73 : 24) ; lateral margin of anterior lobe as shown in Text-fig. 123. Genitalia illustrated in Text-figs. 103-106. Length of body 8.65-9.2 mm., width across humeral angles 2.47-2.52 mm.

Colour. General colour orange ; colour markings very variable. Black or fuscous markings on : vertex, anteclypeus, sides of head largely, antennae except base of segment I and most of the distal part of segment IV, a median band on pronotum and scutellum (sometimes reduced or absent), cuneus almost wholly or only the apex or not at all, membrane, venter except small irregular areas along basisternum

continuing on to abdomen and also anterior half of dorsal margin of abdomen, and legs except apices of coxae, trochanters wholly, and tarsi, black or fuscous. Pubescence concolorous.

FEMALE. Structure. Head about twice as wide as long (41 : 21) ; vertex twice as wide as an eye (22 : 10). Relative lengths of antennal segments, 28 : 75 : 54 : 16. Relative dimensions of width of pronotum across humeral angles, median length of pronotum, and width across pronotal collar, 83 : 57 : 26. Length of body 9.45–11.35 mm., width across humeral angles 2.79–3.20 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. WEST AFRICA : Cameroun, Baigom, 2 ♂, 3 ♀ on *Cafeier (arabica)* (Bamoun). French Togo, nr. Palime, 1 ♀, nymphs on *Coffea arabica*, 7.xii.1943 (H. E. Box). Ghana, Tafo, 1 ♀ on *Randia* sp., xii.1942 (H. E. Box). CONGO : Eala, 1 ♂, 2 ♀ on coffee, 25.x.1917 (R. Mayne). ANGOLA : Congulu, 1 ♂, iv.1934 (K. Jordan). EAST AFRICA : Uganda, Kamozi, 14 ♂, 13 ♀, 29.i.1928 (H. Hargreaves) ; Kampala, 3 ♀, x.1936 (A. F. J. Gedye) (returned to Coryndon Museum, Kenya) ; Toro, Bundibugyo, 1 ♂, 2 ♀ on coffee, 3.viii.1947 (A. P. G. Michelmores) ; Kakira, 2 ♂, 4 ♀ on *Coffea arabica*, 11.iii.1955 (Baldwin) ; Kawanda, 1 ♂ bred from coffee leaves, 19.xii.1952 (E. D. L. Matega) (four specimens returned to Kawanda Research Station).

Lycidocoris ghanaensis sp. n.

(Text-figs. 107–110 and 124)

MALE. Structure. Head across eyes more than twice as wide as it is long in the middle (37 : 17) ; vertex twice as wide as an eye (18 : 9) ; swollen projection of frons not reaching apices of antennal sclerites. Relative lengths of antennal segments, 23 : 75 : 51 : 18 ; segment II only a little thickened towards apex, setae shorter than the segment is thick, those near base somewhat longer than antennal thickness ; segment III very slightly thicker than segment I, the latter very slightly thicker than segment II. Pronotum about $1\frac{1}{2}$ times as wide across humeral angles as it is long in the middle (71 : 48), and three times as wide as across pronotal collar (71 : 23) ; lateral margins of anterior lobe as shown in Text-fig. 124. Genitalia illustrated in Text-figs. 107–110. Length of body 8.45 mm., width across humeral angles 2.29 mm.

Colour. General colour orange. Fuscous or black markings on : vertex, anteclypeus, sides of head, rostrum largely, antennae except apex of segment IV, or the latter almost wholly, a band on pronotum and scutellum, claval commissures, apex or apical two-fifths to two-thirds of cuneus, membrane, thoracic venter except a small area on probasisternum, abdomen entirely or excluding dorsal margin of proximal half and ventral part or more extensively, and legs except apices of coxae, trochanters entirely, and tarsi. Pubescence concolorous.

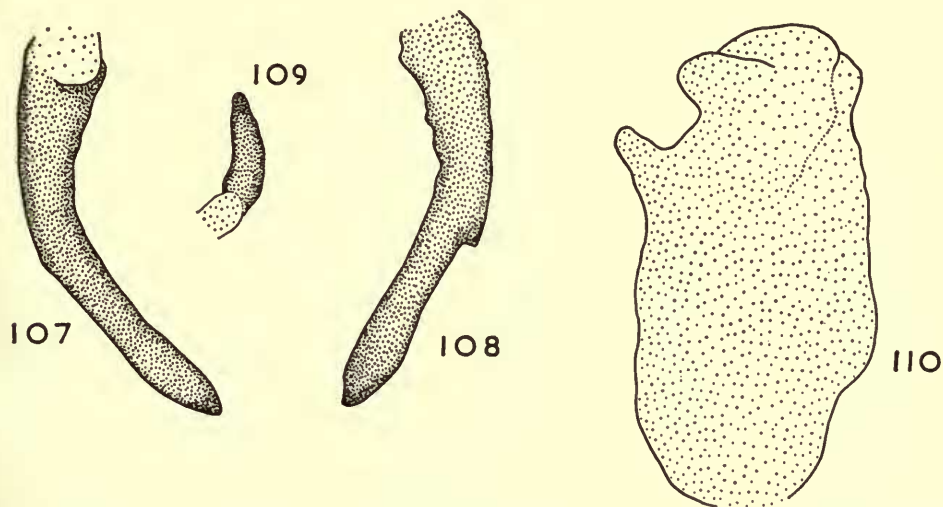
FEMALE. Structure. Head twice as wide as long (40 : 19) ; vertex twice as wide as an eye (21 : 10). Relative lengths of antennal segments, 25 : 77 : 54 : 18. Relative dimensions of width of pronotum across humeral angles, median length of pronotum, and width across pronotal collar, 76 : 53 : 26 (specimen from Cape Coast somewhat

larger). Length of body 10.25 mm., width across humeral angles 2.92 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

Holotype ♂. WEST AFRICA: Ghana, nr. Manso, Cent. Prov., on coffee sp. in primitive forest, 11.ix.1943 (H. E. Box). *Allotype* ♀. Ghana, nr. Cape Coast, nymphs on *Morinda lucida* in coastal scrub, 9.ix.1943 (R. E. Box). *Paratypes.* Ghana, Tafo, 1 ♂ on *Randia* sp., xii.1942; 1 ♂, data as for allotype; 1 ♀, data as for holotype (all H. E. Box). All in B.M.

L. ghanaensis appears to be very closely allied to *L. mimeticus*, except that in the former the antennal segment II is only a little more than four times as long as segment



FIGS. 107-110. Male genitalia of *Lycidocoris ghanaensis* sp. n. 107 and 108, left paramere; 109, right paramere; 110, aedeagus.

IV, in *L. mimeticus* it is about five times; segment II is thinner than segment I in *L. ghanaensis*; the setae on this segment are a little longer; and the shape of the anterior lobe of the pronotum is different.

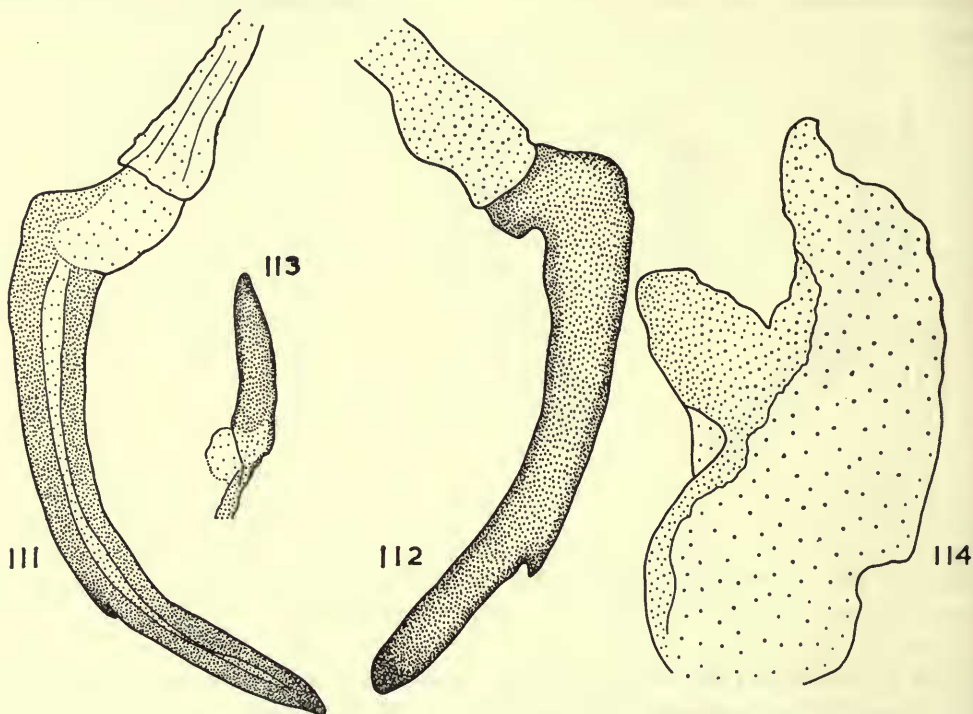
Lycidocoris infulatus sp. n.

(Text-figs. 111-114 and 128)

MALE. Structure. Head across eyes less than twice as wide as it is long in the middle (43:23); vertex more than twice as wide as an eye (23:10); swollen projection of frons slightly surpassing apices of antennal sclerites. Relative lengths of antennal segments, 30:98:70:(IV broken); setae on segment II shorter than antennal thickness; segment II slightly thinner than segment I, the latter slightly thinner than segment III. Pronotum about $1\frac{1}{2}$ times as wide across humeral angles as long in the middle (80:60), and three times as wide as across pronotal collar

(88:29); lateral margins of anterior lobe as shown in Text-fig. 128. Genitalia illustrated in Text-figs. 111-114. Length of body 11.55 mm., width across humeral angles 3.17 mm.

Colour. Head fuscous to black; juga and genae flavescent laterally. Rostrum and antennae black. Dorsum orange; a broad band on pronotum and scutellum (for the most part nine-tenths as wide as pronotal anterior margin), claval commissures, cuneus except base, and membrane, fuscous to black. Venter and legs black; ventral portion and sides of basal two-thirds of abdomen orange; trochanters fuscous. Pubescence concolorous.



FIGS. 111-114. Male genitalia of *Lycidocoris infulatus* sp. n. 111 and 112, left paramere; 113, right paramere; 114, aedeagus.

FEMALE. Structure. Head across eyes more than twice as wide as median length (46:20). Relative lengths of antennal segments, 30:97:69:(IV broken); segments I and II subequal in thickness. Relative dimensions of width of pronotum across humeral angles, median length of pronotum, and width across anterior collar, 92:63:30. Length of body 12.2 mm., width across humeral angles 3.35 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

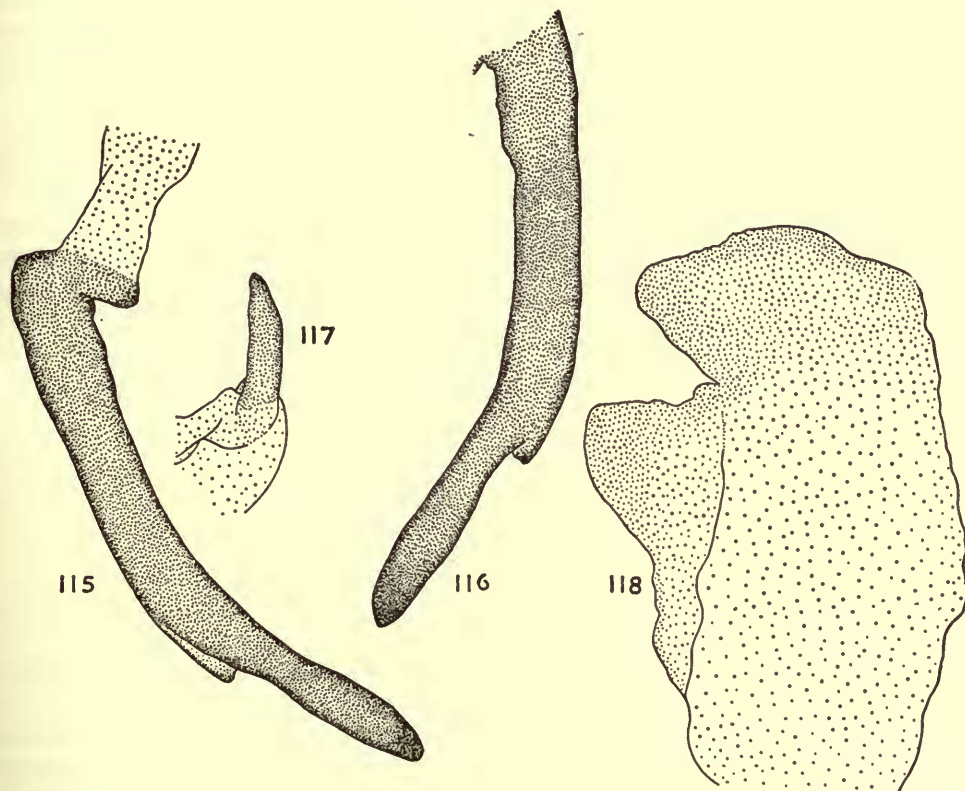
Holotype ♂. EAST AFRICA: Uganda, Entebbe, 1-II.ix.1911 (S. A. Neave). *Allotype* ♀. Uganda, Kawanda, with eggs on *Randia fratum* (Rubiaceae), 19.viii.1939 (H. Hargreaves). Both in B.M.

L. infulatus is characterized by the more swollen frons, the relatively long antennal segment III, the very prominent lateral margins of anterior lobe of the pronotum, and by the colour, particularly that of the frons and tarsi, and the broad dark band on pronotum.

***Lycidocrois tumidus* sp. n.**

(Text-figs. 115-118 and 126)

MALE. Structure. Head across eyes slightly less than twice as wide as it is long in the middle (44 : 23) ; vertex more than twice as wide as an eye (23 : 10) ; swollen projection of frons slightly surpassing apices of antennal sclerites. Relative lengths



FIGS. 115-118. Male genitalia of *Lycidocrois tumidus* sp. n. 115 and 116, left paramere ; 117, right paramere ; 118, aedeagus.

of antennal segments, 29 : 97 : 68 : (IV broken) ; segment II slightly thicker than segment I, segment III much thicker than segment II (about $1\frac{1}{2}$ times as thick) ; setae on the latter nearly as long as antennal thickness. Pronotum more than $1\frac{1}{2}$ times as wide across humeral angles as long in the middle (100 : 61), and more than three times as wide as across pronotal collar (100 : 31) ; lateral margins of anterior

lobe of pronotum very prominent and non-punctate, illustrated in Text-fig. 126. Cuneus broad, only a little longer than broad. Genitalia shown in Text-figs. 115-118. Length of body 12.2 mm., width across humeral angles 3.60 mm.

Colour. Head black; juga and genae laterally largely flavescent or orange. Rostrum and antennae black. Dorsum orange; a narrow band on pronotum and scutellum, sometimes not reaching apex of the latter, apical one-third to two-fifths of cuneus, and membrane, black; claval commissure obscurely and narrowly brownish. Venter and legs black; probasisternum and basal two-thirds of abdomen orange; apices of coxae and trochanters largely fuscous. Pubescence concolorous.

FEMALE. Structure. Head about twice as wide as long (46 : 22); vertex distinctly more than twice as wide as an eye (26 : 11). Relative lengths of antennal segments, 31 : 99 : 68 : (IV broken). Relative dimensions of width of pronotum across humeral angles, median length of pronotum, and width across anterior collar, 117 : 71 : 32. Length of body 14.0 mm., width across humeral angles 4.09 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

Holotype ♂. NORTHERN RHODESIA: Congo border, Kipushi, 15.xii.1927 (H. Silvester Evans). *Allotype* ♀, same data. *Paratype* ♀, same data. All in B.M.

L. tumidus resembles *L. infulatus* very closely, especially in the colour of the head, frons, and tarsi. But in *L. tumidus* the third antennal segment is extremely thickened, and the cuneus is much broader than in any other *Lycidocoris* species (except *L. simulans*). As regards the greatly thickened antennal segment III, *L. tumidus* shows a condition similar to that found in the genus *Pantilioforma* Schumacher; consequently, this character, as a generic diagnostic character, breaks down.

Lycidocoris simulans sp. n.

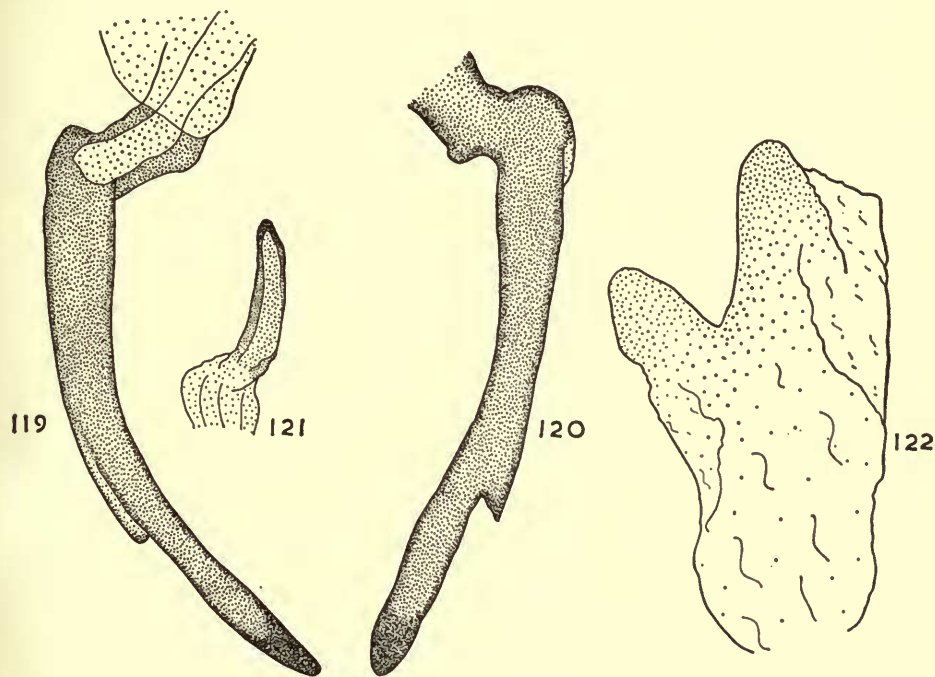
(Text-figs. 119-122 and 125)

MALE. Structure. Head across eyes distinctly more than twice as wide as it is long in the middle (40 : 17); vertex twice as wide as an eye (20 : 10); swollen projection of frons reaching apices of antennal sclerites. Relative lengths of antennal segments, 26 : 84 : (III and IV missing); segment II slightly thinner than segment I; the longer setae near base of segment II about as long as thickness of segment. Pronotum nearly 1½ times as wide across humeral angles as long in the middle (78 : 54), and three times as wide as across anterior collar (78 : 25); lateral margins of anterior lobe very prominent, shown in Text-fig. 125. Cuneus broad, only a little longer than broad. Third tarsal segment shorter than second. Genitalia illustrated in Text-figs. 119-122. Length of body 10.0 mm., width across humeral angles 2.97 mm.

Colour. Head black; juga, lora partially, and genae extensively, orange. Rostrum and antennae black. Dorsum orange; a narrow band on pronotum and scutellum (except extreme apex), claval commissure narrowly, apical half or more of cuneus, and membrane, black. Venter and legs black; probasisternum, dorsal margin of thorax and proximal half of abdomen, and ventral portion of abdomen extensively,

orange; apices of coxae, also trochanters, fuscous; tarsi flavescent. Pubescence concolorous.

FEMALE. Structure. Head less than twice as wide as long (41:23); vertex twice as wide as an eye (21:10). Relative lengths of antennal segments, 29:89:61 (IV broken); segment III distinctly thicker than segment II (about $1\frac{1}{2}$ times as thick). Relative proportions of width of pronotum across humeral angles, median length of



FIGS. 119-122. Male genitalia of *Lycidocoris simulans* sp. n. 119 and 120, left paramere; 121, right paramere; 122, aedeagus.

pronotum, and width across anterior collar, 90:61:30. Length of body 11.0 mm., width across humeral angles 3.42 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male, except: only proximal half of ventral portion of abdomen orange (not "ventral portion of abdomen extensively" as in the male).

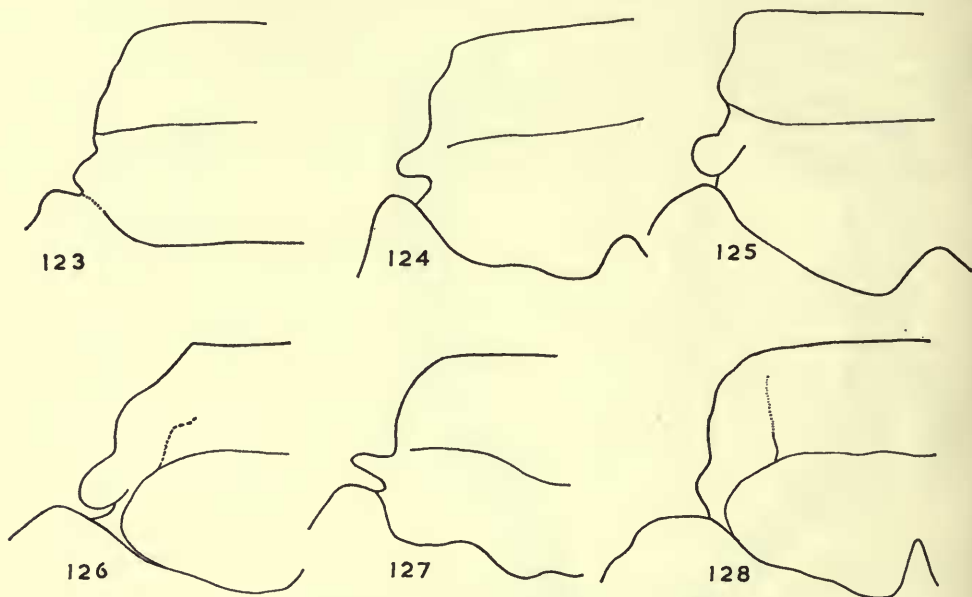
Holotype ♂. WEST AFRICA: Guinea, ex Quinquina (J. Carayon). **Allotype** ♀. Guinea, Seredou, ex Quinquina, xi.1946 (J. Carayon). **Paratypes.** 1 ♂, 1 ♀, same data as for allotype; Sierra Leone, Juri, 1 ♀, 21.viii.1912 (J. J. Simpson). All in B.M.

L. simulans is closely allied to *L. tumidus*, particularly in the structure of the antennae and cuneus, and in the colour of the head and dorsum. But *L. simulans* may be differentiated by the colour of the venter and tarsi, by the relatively shorter antennae, and by the narrower vertex.

Lycidocoris crinatus sp. n.

(Text-fig. 127)

FEMALE. *Structure.* Head across eyes nearly twice as wide as it is long in the middle (36 : 19) ; vertex about $2\frac{1}{2}$ times as wide as an eye (21 : 8) ; swollen projection of frons reaches apices of antennal sclerites. Relative lengths of antennal segments, 23 : 66 : (III and IV missing) ; segment II with only about apical one-fifth thickened,



FIGS. 123-128. Left lateral margin of anterior lobe of pronotum in the genus *Lycidocoris* Reuter & Poppius. 123, *L. mimeticus* Reuter & Poppius ; 124, *L. ghanaensis* sp. n. ; 125, *L. simulans* sp. n. ; 126, *L. tumidus* sp. n. ; 127, *L. crinatus* sp. n. ; 128, *L. infulatus* sp. n.

and here slightly thinner than segment I ; setae on antennae long, those on segment II extremely long and about three times as long as thickness of segment. Pronotum about $1\frac{1}{2}$ times as wide across humeral angles as long in the middle (74 : 49), and about three times as wide as across anterior collar (74 : 24) ; furrow between collar and calli very deep ; lateral margins of anterior lobe of pronotum as illustrated in Text-fig. 127. Setae on legs very long. Length of body 9.6 mm., width across humeral angles 2.63 mm.

Colour. Head black ; juga, lora, and genae narrowly, fuscous. Rostrum and antennae black. Dorsum orange ; anterior pronotal lobe entirely, a narrow band on pronotum and scutellum, claval commissures narrowly, sometimes endocorium and inner half of cuneus, and membrane, black. Venter and legs black ; first and second tarsal segments stramineous, third segment fuscous. Pubescence concolorous, those on the darker parts of corium and cuneus orange in colour.

MALE. Unknown.

Holotype ♀. EAST AFRICA: Kenya, NW. Mau, 8–10,000 ft., i–ii. 1946. In B.M. *Paratype* ♀, same data. Returned to the Coryndon Museum, Kenya.

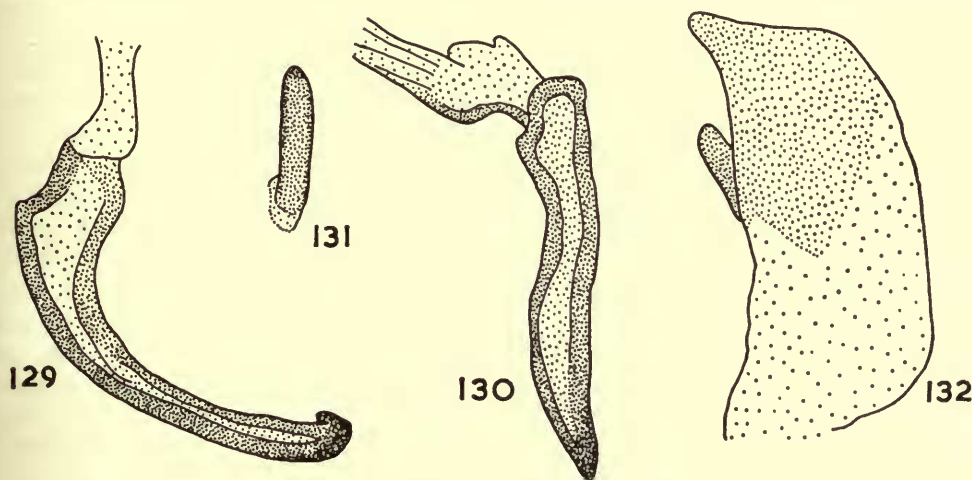
This species is immediately recognized by the very long hairs on antennae and legs, the relatively short antennal segment II, its peculiar thickening, the structure and colour of the anterior pronotal lobe, and by the black venter.

PANTILIOFORMA Schumacher

1917. *Pantilioforma* Schumacher, *S. B. Ges. naturf. Fr. Berlin*, 1917: 447.

Type-species: *P. impressopunctata* Schumacher.

As presently constituted, the genus *Pantilioforma* consists of three species: *P. impressopunctata* Schumacher, *P. thoracicus* (Distant), and *P. modestus* (Distant)—



FIGS. 129–132. Male genitalia of *Pantilioforma modestus* (Distant). 129, left paramere; 130, the same: internal aspect; 131, right paramere; 132, aedeagus.

the latter two having been transferred from *Lycidocoris* by China (1944: 179–180). The three species may be distinguished as noted below:

<i>P. impressopunctata</i>	<i>P. thoracicus</i>	<i>P. modestus</i>
1. Pronotum about $2\frac{1}{2}$ times as wide across humeral angles as across anterior margin	. As in <i>impressopunctata</i>	. A little more than three times as wide across humeral angles as across anterior margin.
2. Pronotal collar as thick as an eye is wide	. As in <i>impressopunctata</i>	. Thinner than an eye is wide.
3. Cuneus much longer than wide	. As in <i>impressopunctata</i>	. About as long as wide.
4. Scutellum distinctly shorter than wide	. A little longer than wide	. A little shorter than wide.

On balance, *P. modestus* seems to be distinct from the other two species. Schouteden (1946 : 275) holds a similar view ; and in fact retains *P. modestus* in his genus *Ealincola*, which is otherwise synonymous with *Pantilioforma*. China (1944 : 179), however, regards *P. thoracicus* as the more isolated species, because of the structure of the scutellum. Since the structure of the male genitalia is known only in *P. modestus* (see Text-figs. 129-132), we will have to leave this question until such time as the male has been discovered in the other two species. For the present, all three species are left in the genus *Pantilioforma*.

BRYOCOROPSIS-SAHLBERGELLA-complex

Schouteden (1935) first drew attention to this complex, and understood it as comprising the genera *Bryocoropsis* Schumacher and *Sahlbergella* Haglund. In 1944 China added two more genera, *Idioaspis* China and *Distantiella* China (the latter proposed for *S. theobroma* Distant). The four genera are very closely related ; indeed, China (1944 : 188) considered regarding them as a single genus ; and Schouteden (1935 : 473) before him had also considered *Bryocoropsis* and *Sahlbergella* to be one genus. Three more genera are now being added to this complex : *Odoniella* Haglund, *Pseudodoniella* China & Carvalho, and *Yangambia* Schouteden (= *Idioaspis*).

In all these genera the scutellum is inflated, and the frons is swollen and usually possesses distinct protuberances. They are also associated with cacao, except, apparently, in the case of *Yangambia*.

A peculiar character, common to all the six genera of the complex, has been recently noted by the present writer, viz. the hemelytral membrane has a dense pale pubescence consisting of very minute scale-like hairs. It is tempting to use this as a diagnostic character for the complex. However, until all genera within the tribe have been examined, and the usefulness and reliability of this character has been attested, we shall merely draw attention to it.

ODONIELLA Haglund

1895. *Odoniella* Haglund, *Öfvers. VetenskAkad. Förh., Stockh.* : 468.
 1905. *Odoniella* Haglund ; Reuter, *Öfvers. finska VetenskSoc. Förh.* **47** (10) : 2.
 1911. *Odoniella* Haglund ; Reuter & Poppius, *Trans. R. ent. Soc. Lond.* **1911** : 411.
 1912. *Odoniella* Haglund ; Poppius, *Acta Soc. Sci. fenn.* **41** (3) : 185.

KEY TO SPECIES OF *Odoniella*

- | | |
|--|----------------------------------|
| 1. Dorsum with dark markings | 2 |
| -. Dorsum uniformly red or orange, except sometimes apex of membrane | 5 |
| 2. Pronotum with black markings | 3 |
| -. Pronotum without dark markings | 4 |
| 3. Calli on pronotum black ; corium extensively black, especially on exocorium.
(Cameroons) | <i>O. reuteri</i> Haglund |
| -. Calli and corium concolorously orange. (Benjon) | <i>O. immaculipennis</i> Poppius |

4. Corium with at least apical half fuscous to black ; membrane broadly fuscous apically ; scutellum without dark markings ; antennal segment II uniformly pale in colour, about four times as long as segment I ; tarsal claws with a tooth. (Ghana, Camerouns, Ivory Coast) *O. rubra* Reuter
- Corium without dark markings ; membrane with only a fuscous spot at apex ; scutellum with two large black areas ; antennal segment II largely fuscous, at least $4\frac{1}{2}$ times as long as segment I ; tarsal claws non-toothed. (Nigeria) *O. camerunensis* Schumacher
5. Hemelytral membrane with black apex ; antennal segments II, III, and IV equally thick. Antennal segment II yellow or orange. Tarsal claws with a large tooth. (Ghana, Togo, Uganda) *O. apicalis* Reuter & Poppius 6
- Membrane uniformly yellowish ; antennal segment IV thicker than segment II or IV
6. Antennal segment II largely fuscous, sub-erect bristles on the segment brownish ; tarsal claws non-toothed. (Spanish Guinea, Kenya, Uganda) *O. unicolor* Poppius
- Antennal segment II uniformly pale, including its pubescence ; tarsal claws with a moderately prominent tooth. (Tanganyika, Uganda, Sesse Is. on L. Victoria) *O. similis* Poppius

The re-descriptions of five species are provided in the following pages.

Odoniella apicalis Reuter & Poppius

(Text-figs. 133-135 and 144)

1911. *Odoniella apicalis* Reuter & Poppius, *Trans. R. ent. Soc. Lond.* 1911 : 412 ; pl. 32, fig. 4.

MALE. Structure. Head across eyes more than twice as wide as it is long in the middle (41 : 18) ; vertex about $2\frac{1}{2}$ times as wide as an eye (47 : 17), and with a fine, nearly obsolete, longitudinal sulcus in the middle. Relative lengths of antennal segments, 15 : 71 : 47 : 33 ; segments II, III, and IV equally thick, segment I thicker. Pronotum across humeral angles about twice as wide as long in the middle (103 : 52), and about four times as wide as across pronotal collar (103 : 26). Membranal cell not surpassing apex of cuneus ; cell with rounded apex. Tarsal claws with a large tooth (Text-fig. 144). Genitalia illustrated in Text-figs. 133-135. Length of body 8.35 mm., width across humeral angles 3.69 mm.

Colour. General colour red or orange. Antennal segments I and II reddish-yellow, segments III and IV black ; pubescence on antennae concolorous, sub-erect bristles on segment II yellowish-brown. Anal ridge of hemelytra black ; membrane yellow.

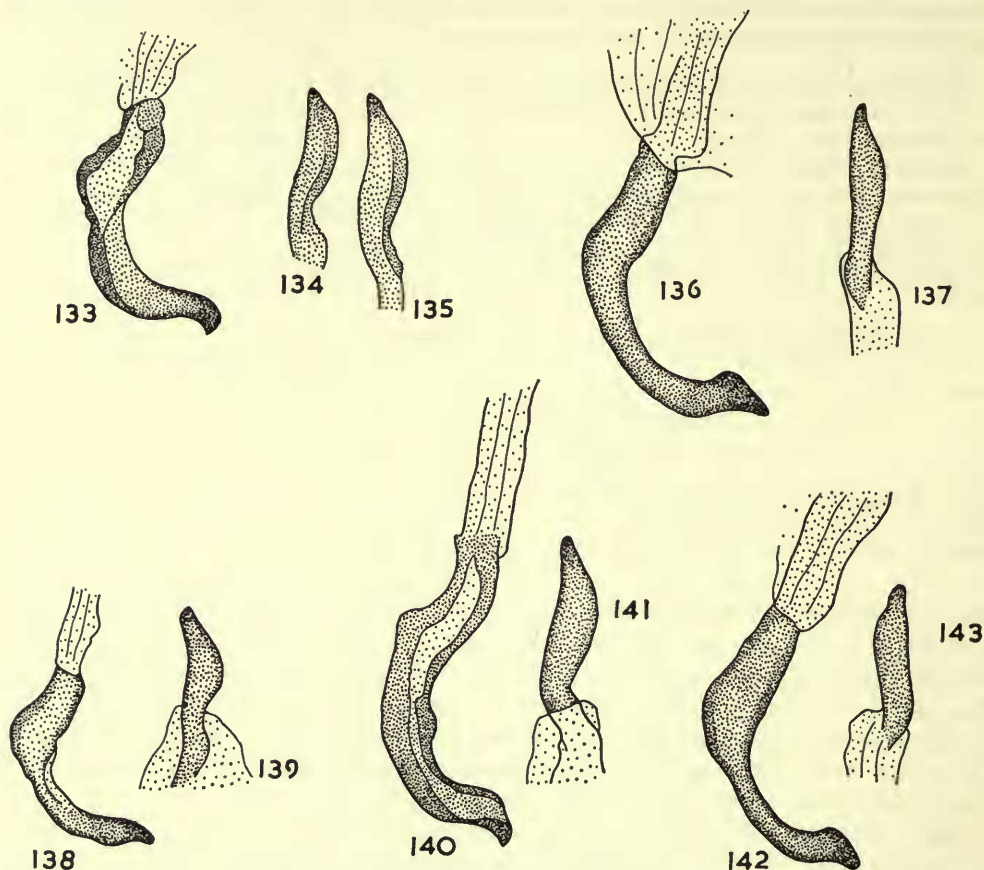
FEMALE. Structure. Head nearly $2\frac{1}{2}$ times as wide as long (44 : 18) ; vertex nearly three times as wide as an eye (51 : 18). Relative lengths of antennal segments, 15 : 60 : 48 : 35. Relative proportions of width of pronotum across humeral angles, median length of pronotum, and width across anterior collar, 110 : 57 : 34. Length of body 10.6 mm., width across humeral angles 4.05 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED (in the Coryndon Museum, Kenya). EAST AFRICA : Uganda, Bwamba Forest, 1 ♂, v. 1952 (E. Pinhey). Material examined in B.M. EAST AFRICA : Uganda, Toro, Daro or Durro Forest, 4,000-4,500 ft., 2 ♂, 25-29.x.1911 (S. A. Neave) ; Bwamba Forest, Semliki Valley, 2,500-2,800 ft., 1 ♀, 3-7.xi.1911 (S. A. Neave) ; Kampala, 1 ♂, 24.xi.1938 ; 2 ♂, 1 ♀ on *Piper*, 14.vii.1939 (all H.

Hargreaves). Kawanda, 1 ♂, 17.ix.1939; 1 ♀, 9.xi.1939 (both H. Hargreaves). WEST AFRICA: Ghana, nr. Tafo, 1 ♀ on *Piper guineense*, i.1943 (H. E. Box).

The toothed tarsal claw immediately distinguishes this species from the rest of the genus, except *O. similis* and *O. rubra*.



FIGS. 133-143. Male genitalia in the genus *Odoniella* Haglund. 133-135: *O. apicalis* Reuter & Poppius. 133, left paramere; 134 and 135, right paramere. 136 and 137: *O. unicolor* Poppius. 136, left paramere; 137, right paramere. 138 and 139: *O. rubra* Reuter. 138, left paramere; 139, right paramere. 140 and 141: *O. similis* Poppius. 140, left paramere; 141, right paramere. 142 and 143: *O. cameruensis* Schumacher. 142, left paramere; 143, right paramere.

Odoniella unicolor Poppius

(Text-figs. 136 and 137)

1912. *Odoniella unicolor* Poppius, *Acta Soc. Sci. fenn.* 41 (3): 187.

The female is described for the first time.

MALE. *Structure*. Head across eyes about twice as wide as long in the middle (41:21); vertex three times as wide as an eye (24:3), and with the median longi-

tudinal sulcus nearly obsolete. Relative lengths of antennal segments, 14 : 72 : 50 : 34; segment IV distinctly thicker than segments II and III, and about as thick as segment I. Pronotum across humeral angles less than twice as wide as long in the middle (99 : 25). Membranal cell surpasses apex of cuneus; cell with acute apex. Genitalia illustrated in Text-figs. 136 and 137. Length of body 9.95 mm., width across humeral angles 3.42 mm.

Colour. General colour red or orange. Antennal segment I orange; segment II fuscous, base and apex orange; segments III and IV black; sub-erect bristles on segment II brownish. Anal ridge of hemelytra black; membrane yellowish.

FEMALE. Structure. Head slightly wider than in the male (43 : 21); vertex nearly three times as wide as an eye (25 : 9). (Antennae missing.) Relative dimensions of width of pronotum across humeral angles, median length of pronotum, and width across anterior collar, 104 : 54 : 26. Length of body 12.35 mm., width across humeral angles 3.78 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED (in the Coryndon Museum, Kenya). EAST AFRICA: Kenya, Kaimosi, 1 ♂, v. 1952 (E. Pinhey); Kakamega, Yala River, 1 ♀ (H. J. A. Turner). Uganda, Kalinzu Forest, 1 ♂, x. 1948 (T. H. E. Jackson); Entebbe, 1 ♂, vi. 1957 (R. Carcasson). Material examined in B.M. EAST AFRICA: Kenya, Kome (on L. Victoria), 1 ♂, 13. xii. 1918; Kome Forest, 1 ♂, 14. xii. 1918 (both G. D. H. Carpenter). Uganda, SE. Buddu, Toro Forest, 3,800 ft., 1 ♂, 26-30. ix. 1911 (S. A. Neave); Bunyoro, Budongo Forest, 3,400 ft., 1 ♂, 11-15. xii. 1911 (S. A. Neave); North of L. Isolt, 3,700 ft., 1 ♂, 4-6. i. 1912 (S. A. Neave); Mabira Forest, 1 ♂, 27. ix. 1913 (C. C. Gowdey); Buunga, 2 ♂, 21. viii. 1933 (H. Hargreaves); Entebbe, lake-side, 1 ♀, 6. v. 1957 (T. R. Odhiambo). Two specimens returned to Kawanda Research Station.

Apart from the non-toothed tarsal claws and the structure of the male genitalia, *O. unicolor* may be easily distinguished from *O. apicalis* by the dark antennal segment II, by the thick antennal segment IV, and by the unicolorous hemelytral membrane. In Poppius' original description, antennal segment II is stated to be only four times as long as segment I; in the present study it has been found to be five times as long.

Odoniella rubra Reuter

(Text-figs. 138, 139 and 145)

1905. *Odoniella rubra* Reuter, *Öfvers. finska Vetensk Soc. Förh.* 47 (10) : 2.

1912. *Odoniella rubra* Reuter; Poppius, *Acta Soc. Sci. fenn.* 41 (3) : 187.

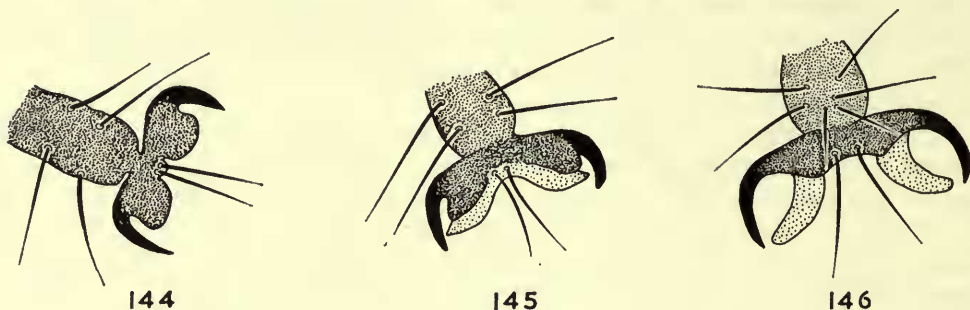
The male is described for the first time.

MALE. Structure. Head across eyes nearly twice as wide as long in the middle (42 : 22); vertex three times as wide as an eye (47 : 16), and non-sulcate. Rostrum extending beyond apices of fore coxae. Relative lengths of antennal segments, 14 : 57 : 43 : 32; segments III and IV about equally thick, segment II slightly thinner, segment I slightly thicker. Pronotum nearly twice as wide across humeral angles as it is long in the middle (90 : 46), and less than four times as wide as across pronotal collar (90 : 25). Tarsal claws with a somewhat prominent basal tooth

(Text-fig. 145). Genitalia illustrated in Text-figs. 138 and 139. Length of body 7.2 mm., width across humeral angles 3.19 mm.

Colour. General colour orange to red, sometimes more yellowish. Antennal segments I and II orange, segments III and IV black; sub-erect bristles on segment II yellowish-brown. Apical half of corium (excluding embolium) and anal ridge black; membrane yellowish, apex broadly fuscous, vein sometimes suffused with red.

FEMALE. Structure. Head nearly twice as wide as long (44 : 23); vertex almost three times as wide as an eye (51 : 18). Relative lengths of antennal segments, 15 : 64 : 46 : 33; segment IV about as thick as segment I. Relative proportions of width of pronotum across humeral angles, median length of pronotum, and width



FIGS. 144-146. Tarsal claws in *Odoniella* Haglund. 144, *O. apicalis* Reuter & Poppius; 145, *O. rubra* Reuter; 146, *O. similis* Poppius.

across anterior collar, 110 : 55 : 28. Length of body 9.2 mm., width across humeral angles 3.96 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male, except: corium in Cameroons specimens extensively black.

MATERIAL EXAMINED. WEST AFRICA : Ghana, nr. Tafo, 2 ♂, 1 ♀ on *Piper guineense*, i. 1943 (H. E. Box). Pamen, E. P., 1 ♀ feeding on leaves of twiner in swollen-shoot patch, ix. 1942 (G. S. Cotterell). British Cameroons, L. Barombi, 800 ft., 1 ♀ on *P. guineense*, 20. i. 1944 (H. E. Box). All in B.M.

Odoniella similis Poppius

(Text-figs. 140, 141 and 146)

1914. *Odoniella similis* Poppius, *Acta Soc. Sci. fenn.* 44 (3) : 129.

The female is described for the first time.

MALE. Structure. Head across eyes twice as wide as long in the middle (41 : 21); vertex nearly three times as wide as an eye (48 : 17), and with the median longitudinal sulcus obsolete or very nearly so. Rostrum extending a little beyond apices of fore coxae. Relative lengths on antennal segments, 15 : 74 : 52 : 35; segment IV distinctly thicker than segments II and III, and about as thick as segment I. Pronotum across humeral angles nearly twice as wide as it is long in the middle (98 : 52), and nearly

four times as wide as across anterior collar (98 : 25). Genitalia illustrated in Text-figs. 140 and 141. Length of body 9.4 mm., width across humeral angles 3.60 mm.

Colour. General colour red or orange. Antennal segments I and II orange ; pubescence on segment II concolorous, sometimes sub-erect bristles towards apex somewhat yellowish-brown. Anal ridge of hemelytra black ; membrane yellowish.

FEMALE. Structure. Head across eyes more than twice as wide as median length (44 : 19) ; vertex almost three times as wide as an eye (51 : 18). Relative lengths of antennal segments, 15 : 66 : 47 : 33 ; segment IV only slightly thicker than segments II and III. Relative dimensions of width across humeral angles, median length of pronotum, and width across anterior collar, 117 : 62 : 28. Length of body 10.25 mm., width across humeral angles 4.25 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. EAST AFRICA : Uganda, West shores of Victoria Nyanza, Buddu, 3,700 ft., 1 ♀, 19-25.ix.1911 (S. A. Neave). Entebbe, 1 ♂, 16.xii.1912 (C. C. Gowdey). Sesse Isles, 1 ♂, 3.iv.1925 (G. D. H. Carpenter). Kampala, 2 ♀ on *Smilax*, 24.xi.1938 (H. Hargreaves). Kawanda, 1 ♀, 27.x.1939 (H. Hargreaves). One specimen returned to Kawanda Research Station ; all others in B.M.

Odoniella camerunensis Schumacher

(Text-figs. 142 and 143)

1917. *Odoniella camerunensis* Schumacher, *S. B. Ges. naturf. Fr. Berlin*, 1917 : 451.

The male is described for the first time.

MALE. Structure. Head across eyes almost twice as wide as median length (38 : 20) ; vertex nearly three times as wide as an eye (21 : 8), and with the median longitudinal sulcus indistinct. Relative lengths of antennal segments, 14 : 64 : 47 : 32 ; segment IV distinctly thicker than segments II and III, segment I slightly thicker than IV. Pronotum across humeral angles almost twice as wide as it is long in the middle (89 : 46), and nearly four times as wide as across anterior collar (89 : 23). Genitalia illustrated in Text-figs. 142 and 143. Length of body 7.45 mm., width across humeral angles 3.20 mm.

Colour. General colour orange. Antennal segment I orange ; segment II fuscous to black, base and apex yellowish or orange ; segments III and IV black. A large spot on either half of scutellum black. Anal ridge of hemelytra black ; membrane yellowish, apex with a fuscous spot, vein orange.

FEMALE. Not examined.

MATERIAL EXAMINED. WEST AFRICA : Nigeria, Ijebu Igbo, 1 ♂ on *Culcasia parvifolia* in secondary forest, 23.xii.1943 (H. E. Box). In B.M.

PSEUDODONIELLA China & Carvalho

1951. *Pseudodoniella* China & Carvalho, *Bull. ent. Res.* 42 (2) : 465.

1951. *Parabryocoropsis* China & Carvalho, *Bull. ent. Res.* 42 (2) : 468 (syn. n.).

Type-species : *Pseudodoniella pacifica* China & Carvalho.

From the original descriptions of the two genera, *Parabryocoropsis* China & Carvalho

may be distinguished from *Pseudodoniella* China & Carvalho as follows: (1) by the stout body (in *Pseudodoniella* the body is relatively elongate); (2) by the frontal tubercle having two lateral blunt protuberances forming a V-shape (in *Pseudodoniella* the frontal tubercle is less acutely pointed); (3) by the smooth, shiny, irregular, tubercular swellings on the pronotum and scutellum; and (4) by the exposed abdominal connexiva (in *Pseudodoniella* they are partially covered).

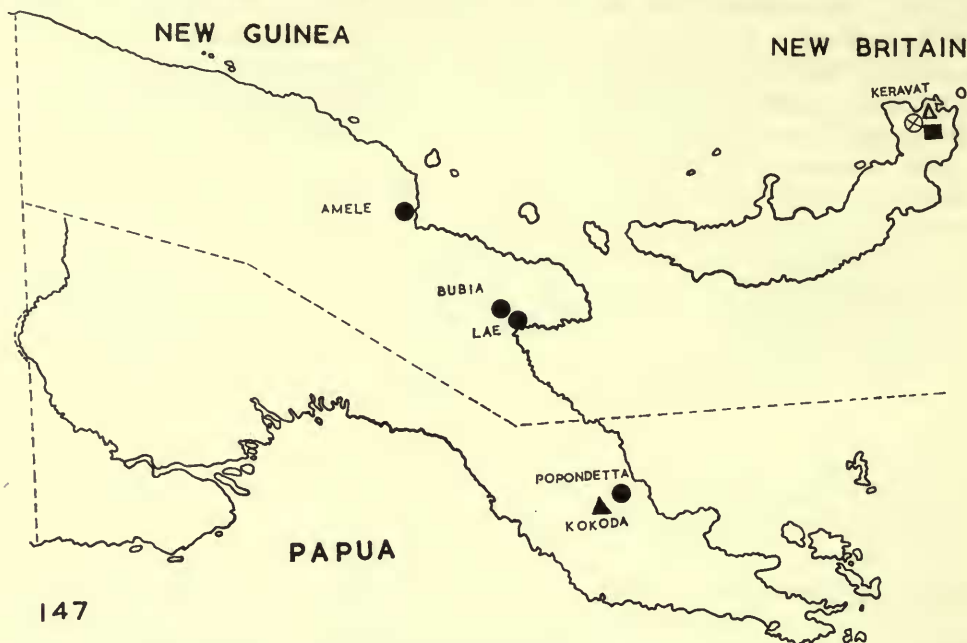


FIG. 147. Distribution of species of *Pseudodoniella* China & Carvalho. Key to signs:

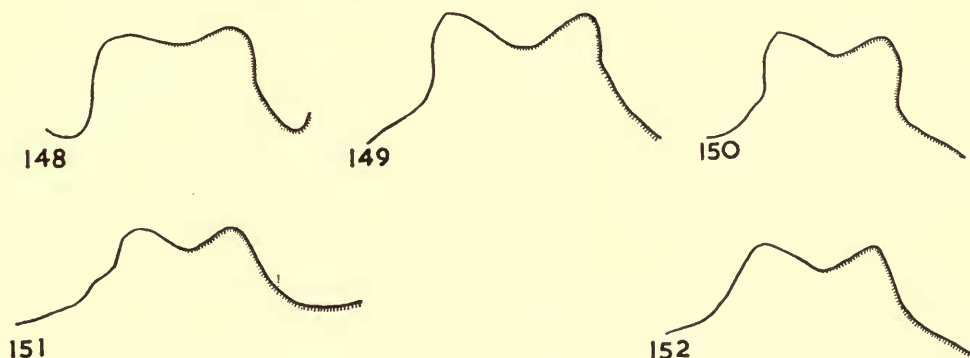
- △ *P. pacifica* China & Carvalho
- ▲ *P. cheesmanae* (China & Carvalho)
- *P. laensis* Miller
- ⊗ *P. typicus* (China & Carvalho)
- *P. duni* (China & Carvalho)

On the other hand: (1) *Parabryocoropsis duni* is intermediate in shape between the typical species of the two genera; (2) a series in the shape of the frontal tubercle is discernible amongst the species of the two genera, viz. *Pseudodoniella pacifica*—*Pseudodoniella laensis*—*Parabryocoropsis typicus*; (3) *P. pacifica* has more or less distinct, smooth, shiny, tubercular swellings, particularly on the scutellum; and (4) the abdominal connexiva are exposed in both *P. duni* and *P. laensis*.

In his 1957 paper, Miller transferred *cheesmanae* and *duni* from the genus *Parabryocoropsis* to *Pseudodoniella*, and he also described two new species of *Pseudodoniella*—*laensis* and *szentivanyi*. Miller used the following characters to separate the two genera: in *Parabryocoropsis* (1) the body is less elongate, being only twice as long as wide; (2) the scutellum is much shorter than broad, and not visibly emarginate at apex; (3) the antennae are shorter and thicker; (4) the cuneus is much shorter; (5) the

hind tibiae are straight, thicker, and feebly nodular (in *Pseudodoniella* they are distinctly curved and minutely tuberculate); and (6) the abdominal connexiva are not covered by hemelytra. None of these differences is convincing as a diagnostic character, as there are intermediates (in characters 1, 4, and 6 above), or they are no more than specific characters (characters 2, 3, and 5).

In view of the difficulty of distinguishing the two genera from each other, therefore, and since the genitalic structures show no distinct differences either, it is concluded that only one genus is represented here. It is proposed to regard *Parabryocoropsis* as a synonym of *Pseudodoniella*.



FIGS. 148-152. Shape of frons in *Pseudodoniella* as viewed from above. 148, *P. pacifica* China & Carvalho; 149, *P. duni* (China & Carvalho); 150, *P. typicus* (China & Carvalho); 151, *P. cheesmanae* (China & Carvalho); 152, *P. laensis* Miller.

A new key has been constructed to facilitate identification since Miller's (1957) key is difficult to use, and because his species *szentivanyi* has been synonymized with *laensis* Miller (see below).

KEY TO SPECIES OF *Pseudodoniella*

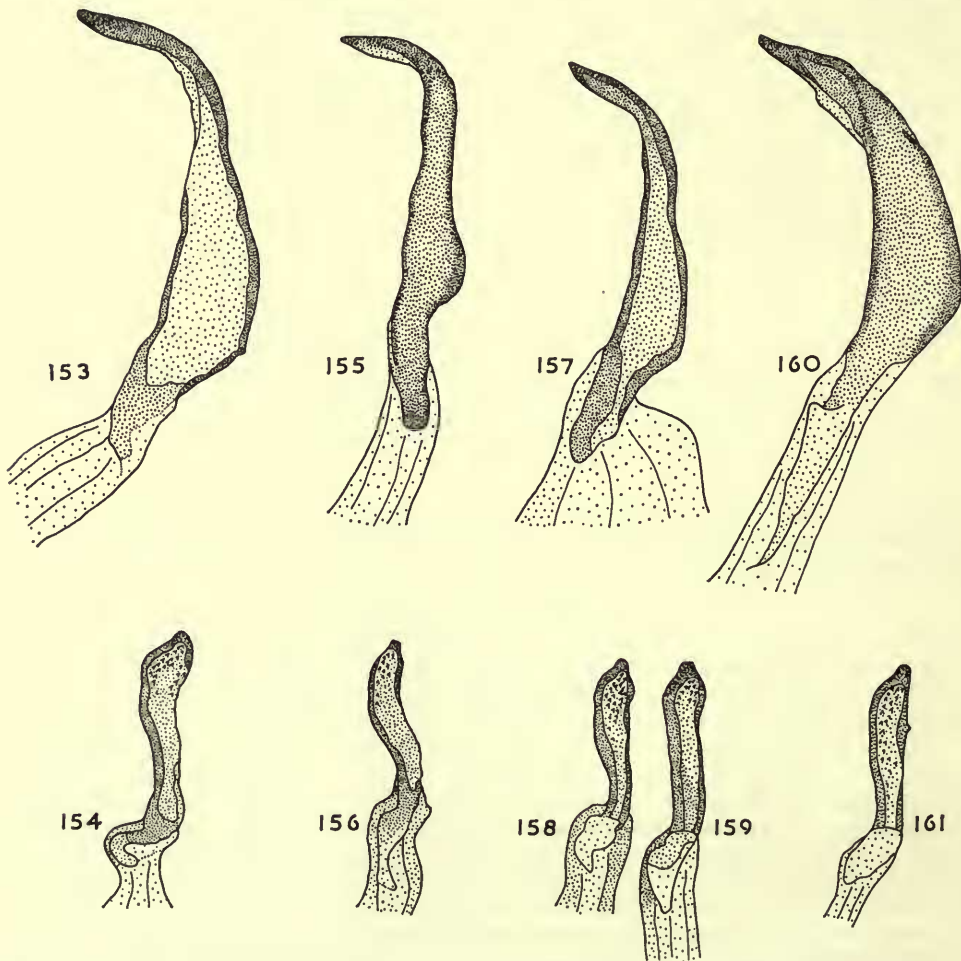
1. Pronotum with distinct, smooth, shiny, tubercular swellings; the two protuberances on the frontal tubercle very prominent and V-shaped (Text-figs. 149-152) 2
- Pronotum without distinct tubercular swellings; the two protuberances on the frontal tubercle very short and widely separated (Text-fig. 148). (New Britain)
P. pacifica China & Carvalho
2. Scutellum in profile appears abruptly rounded to apex; antennal segment II five times as long as segment I, apical one-sixth clubbed, and here nearly twice as thick as at base; antennal segment III with three prominent swellings; robust species 3
- Scutellum in profile appears gently rounded to apex; antennal segment II about six times as long as segment I, apical one-sixth not clubbed, and here only $1\frac{1}{2}$ times as thick as at base; antennal segment III only indistinctly, irregularly swollen; more slender species 4
3. Dorsum largely reddish. (New Britain) *P. duni* (China & Carvalho)
- Dorsum largely dark. (New Britain) *P. typicus* (China & Carvalho)
4. Apex of scutellum as seen from above somewhat emarginate
P. cheesmanae (China & Carvalho)
- Apex of scutellum as seen from above truncate. (Papua and New Guinea)
P. laensis Miller

Pseudodoniella laensis Miller

(Text-figs. 147, 152, 157-159)

1957. *Pseudodoniella laensis* Miller, *Bull. ent. Res.* 48 (1) : 57, figs.1957. *Pseudodoniella szentivanyi* Miller, *Bull. ent. Res.* 48 (1) : 57, fig.1960. *Pseudodoniella laensis* Miller; Odhiambo, *Bull. ent. Res.* 51 : 519-521 figs.

In a recent paper the author (Odhiambo, 1960) has stated reasons why he synonymized Miller's two species, *P. laensis* and *P. szentivanyi*. Briefly, Miller based his



FIGS. 153-161. Male genitalia of *Pseudodoniella* China & Carvalho. 153 and 154: *P. pacifica* China & Carvalho. 153, left paramere; 154, right paramere. 155 and 156: *P. typicus* (China & Carvalho). 155, left paramere; 156, right paramere; 157-159: *P. laensis* Miller. 157, left paramere; 158 and 159, right paramere at slightly different angles. 160 and 161: *P. cheesmanae* (China & Carvalho). 160, left paramere; 161, right paramere.

descriptions very largely on colour, and even in this case there is great variation and overlap in the colour of the two nominal species ; furthermore, no consistent difference could be detected in either external structure or the structure of male genitalia (although in the case of genitalia of the genus as a whole only *P. cheesmanae* shows obvious structural differences, cf. Text-figs. 153-161). *P. laensis* takes page priority over *P. szentivanyi*.

YANGAMBIA Schouteden

1942. *Yangambia* Schouteden, *Rev. Zool. Bot. afr.* **35** (1) : 5.

1944. *Idioapsis* China, *Bull. ent. Res.* **35** (2) : 186.

Schouteden (1942 : 5) erected *Yangambia* to receive a peculiar new species from the Congo somewhat similar to *Sahlbergella* species, but having processes on the pronotal collar. At almost the same period, China (1944 : 186-188) named a new, species from West Africa for which he erected a new genus, *Idioapsis*, and which also showed these same peculiar pronotal processes. Schouteden later came to the conclusion that the two genera were identical (Schouteden, 1945 : 116). In addition, he synonymized the two species concerned.

Type material of both species has been examined in the course of the present studies. Schouteden is undoubtedly correct in synonymizing the two genera ; but there is no supporting evidence for sinking China's species as well. The latter species is, therefore, being resurrected from synonymy. The two species of *Yangambia* may be separated as follows :

Y. vesiculata Schouteden

1. Bristles on antennal segment II sparse
2. Posterior lateral angles of pronotum with five large serrations and two minute ones (Text-fig. 165)
3. Apex of scutellum blunt and spatulate (Text-fig. 163)
4. Scutellum with basal lobe more or less smooth, with only slight swellings or depressions
5. Pronotum and scutellum pale in colour

Y. macarangae (China) **comb. n.**

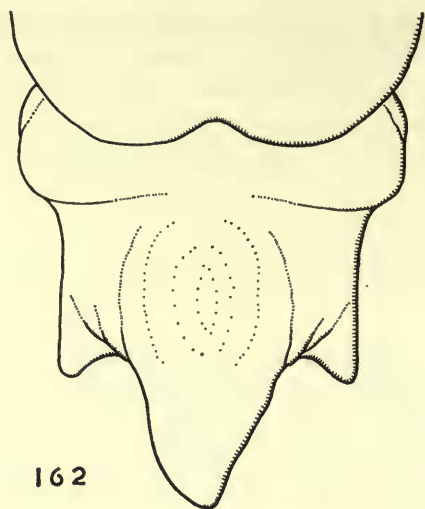
- . Dense.
- . With only five serrations (Text-fig. 164).
- . Apex of scutellum pointed (Text-fig. 162).
- . Scutellum with distinct swellings.
- . Pronotal collar, posterior lobe of pronotum, and basal lobe of scutellum, largely dark.

VOLKELIUS Distant

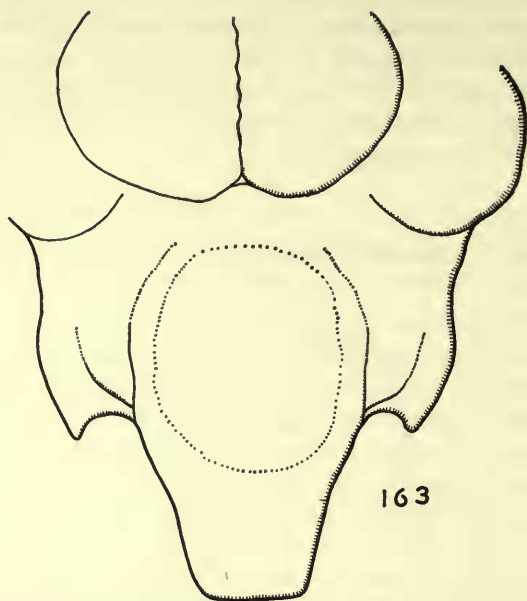
1904. *Volkeli* Distant, *Ann. Mag. nat. Hist.* (7) **13** : 271.

As Distant's (1904) description is rather inadequate a fuller one is provided below. It should also be noted that the single known species of the genus is confined to Australia, and does not appear to have been recorded elsewhere. *Volkeli* and *Pseudodoniella* are the only genera of the *Bryocoropsis-Sahlbergella*-complex found outside the Ethiopian Region.

A second (new) species is represented by a single specimen in the British Museum (Nat. Hist.) (data : Tooloom, N.S.W., Jan., 1926, H. Hacker) ; but it has lost its abdomen, so it has been thought best to leave it undescribed for the time being.

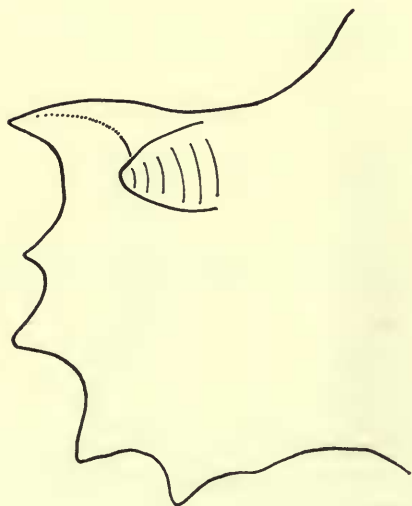


162

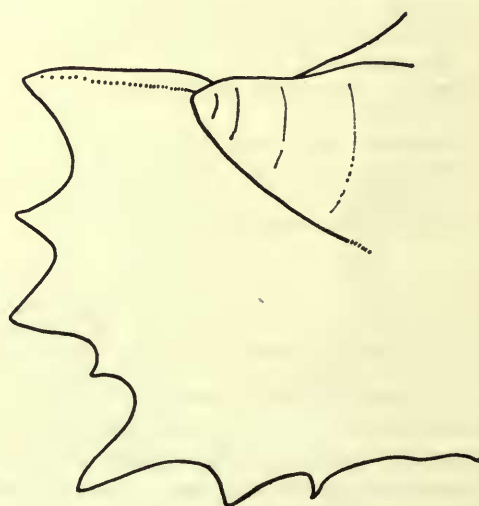


163

FIGS. 162 and 163. Shape of apex of scutellum from above in *Yangambia* Schouteden. 162, *Y. macarangae* China; 163, *Y. vesiculata* Schouteden.



164



165

FIGS. 164 and 165. Serration on left posterior lateral angle of pronotum in *Yangambia* Schouteden. 164, *Y. macarangae* China; 165, *Y. vesiculata* Schouteden.

RE-DESCRIPTION. Body shiny. Head short and very transverse ; vertical, nearly half as high as it is broad ; viewed from above appears half as long as broad, from the side appears a little shorter than high ; covered with sparse bristles. Vertex with a median longitudinal sulcus, dividing two oval callus-like areas delimited by raised edges ; the rest of the head smooth and shiny. Frons swollen, blunt. Anteclypeus inflated, separated from frons by a transverse depression, anterior edge as seen in profile sinuate in the middle. Eyes prominent, sub-stylate, located near anterior lateral margins of head ; from the side eyes appear to occupy only half height of head, from in front inner margins appear somewhat concave. Rostrum extends to apices of fore coxae ; segment I reaching base of head. Antennae inserted near lower margin of eyes ; segment I very thick, more than half as thick as it is long, extreme base slender, thickest near base, about one-third as long as head is wide and slightly more than half as long as width of vertex, segment covered with somewhat scattered erect bristles arising from minute swellings ; segment II about as long as head and pronotum together, more slender than segment I, about apical quarter clavate, densely covered with sub-erect and some erect bristles, the latter longer than the thickness of the thinnest part of the segment, base of segment somewhat thickened ; segment III about as long as pronotum, incrassate towards apex, and here distinctly thicker than segment II, and about as thick as segment I ; segment IV fusiform, greatly thickened, thicker than segment I ; bases of segment III and IV thin ; segments III and IV densely covered with short adpressed hairs and some moderately long sub-erect or erect bristles, such hairs also present on apical half of segment II. Pronotum convex, deflected anteriorly, disc (except calli) rugosely punctate, disc (including calli) covered with erect moderately long hairs, densely so near the margins, posterior margin sinuate ; collar extending posteriorly in a triangular area between the calli ; calli smooth, very shiny, reaching lateral margins of pronotum ; fore acetabula visible from above. Scutellum triangulate, slightly shorter than broad, convex, not distinctly higher than pronotum at base, with a median longitudinal sulcus ; disc rough, covered with numerous small swellings, densely covered also with erect hairs. Hemelytra densely pubescent ; cuneus longer than broad ; membrane with a very dense pale covering of minute scale-like pubescence. Abdominal connexiva only partially exposed. Legs shaggy, densely covered with bristles, particularly tibiae, the bristles arise out of small swellings ; femora somewhat thickened at apex ; tibiae thick, equally so throughout their length ; tarsi not markedly swollen apically, first and third segments subequal in length, second segment a little shorter ; tarsal claws with a moderately large tooth. Type-species : *Volkelius sulcatus* Distant.

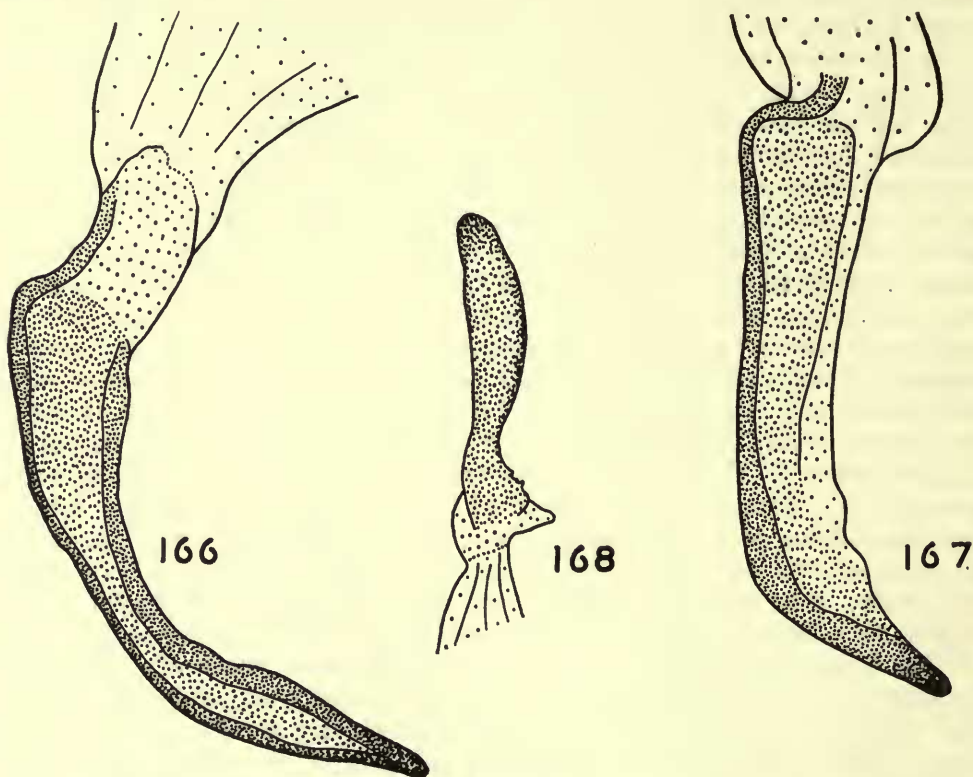
Volkelius sulcatus Distant

(Text-figs. 166-168)

1904. *Volkelius sulcatus* Distant, *Ann. Mag. nat. Hist.* (7) 13 : 271.

MALE. *Structure.* Head across eyes about $2\frac{1}{2}$ times as broad as median length (42 : 16) ; vertex about $2\frac{1}{2}$ times as wide as an eye (23 : 9). Relative lengths of antennal segments, 16 : 64 : (III and IV missing) ; segment I greatly thickened

(except the narrow base), as thick as hind femur at apex; segment II thickened towards apex, near base only half as thick as segment I, at apex only a little thinner than segment I. Pronotum more than $1\frac{1}{2}$ times as wide across humeral angles as long in the middle (80 : 47), and more than three times as wide as across anterior collar (80 : 25). Hemelytra densely covered with rather short erect hairs. Genitalia illustrated in Text-figs. 166-168. Length of body 7.4 mm., width across humeral angles 2.83 mm.



FIGS 166-168. Male genitalia of *Volkelius sulcatus* Distant. 166, left paramere; 167, the same: internal aspect; 168, right paramere.

Colour. General colour reddish-brown. Pubescence yellowish-brown, except hairs on antennae and dark areas on hemelytra which are fuscous to black. Antennae fuscous to black, base of segment I narrowly reddish-brown. Scutellum fuscous to brown, extreme apex reddish-brown. Exocorium, apex of endocorium, anal ridge, inner basal angles of cuneus, and inner lateral margin (excluding apex) of the latter narrowly, fuscous to black; membrane smoky black. Coxae, trochanters, and bases of femora, reddish-brown, sometimes more extensively so on femora; the rest of femora, bases of fore and middle tibiae broadly, and hind tibiae entirely, black; tibiae and tarsi yellowish-brown, apices of tibiae and tarsi sometimes brownish.

FEMALE. Structure. Head more than twice as broad as long (45 : 20) ; vertex nearly three times as wide as an eye (26 : 9). Relative lengths of antennal segments, 14 : 65 : 44 : 37. Relative proportions of pronotum as to width across humeral angles, median length, and width across anterior collar, 90 : 51 : 28. Length of body 8.55 mm., width across humeral angles 3.24 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. AUSTRALIA : Queensland, Townsville, 1 ♀ (Holotype), 10.ii.1902 ; 1 ♂, 1 ♀, 17.ii.1903 (all F. P. Dodd). In B.M.

VILLIERSICORIS Delattre

1950. *Villiersicoris* Delattre, *Bull. Mus. Hist. nat. Paris* (2) 22 (2) : 263.

Delattre has enumerated the differences between his genus and *Sahlbergella*, *Boxia*, and *Odoniella*.

The present studies show that *Villiersicoris* is closely allied to *Volkelius*, and may later prove to be congeneric with it. At the moment, however, this question is not being finally settled since the male genitalia have not been examined in *Villiersicoris* (the two species are only known from the female). The most distinctive feature of *Villiersicoris* is the presence of large pronotal calli which project beyond the lateral margins of the pronotum. Although they are not found in *Volkelius* in this exaggerated condition, nevertheless the calli are large and reach the lateral margins of the pronotum. The second notable feature of *Villiersicoris* is the clavate apical portions of the second antennal segment and hind femora. In *Volkelius* the beginnings of this are seen. The relative lengths of the rostrum, which have been used to separate the two genera, is not a good character. The best diagnostic character seems to lie in the presence of a row of coarse punctures along the claval sutures which is found in *Villiersicoris* but not in *Volkelius* or, apparently, in the other genera of the *Bryocoropsis-Sahlbergella*-complex.

Villiersicoris sessensis sp. n.

(Text-fig. 169)

FEMALE. Structure. Head across eyes nearly three times as broad as median length (34 : 12), and extending well beyond anterior lateral angles of pronotum ; long erect bristles on anteclypeus, frons, and either side of vertex ; vertex about $3\frac{1}{2}$ times as wide as an eye (22 : 6), with a median longitudinal sulcus ; callus-like areas on vertex obscure, delimited merely by indistinct round ridges round the smooth areas. Eyes sub-pedunculate, in profile appear to occupy only half height of head. Relative lengths of antennal segments 11 : 43 : 27 : 26 ; segment I inflated, as long as pronotal callus is wide, base very thin, segment covered with erect bristles, the latter shorter than those on the head ; segment II with about apical two-fifths clavate, and here about as thick as segment I, and about three times as thick as at base ; segments III and IV fusiform, greatly thickened, four times as thick as segment II at base, and about as thick as hind femur at apex ; basal thin portion of segment II with sub-erect bristles, apical portion of the segment and segments III and IV wholly densely

covered with adpressed hairs and isolated short bristles. Rostrum reaching nearly to bases of middle coxae. Pronotum rugosely punctate, calli smooth, collar with small swellings bearing long erect bristles, long erect bristles also on lateral margins of calli and along margins of pronotum; disc across humeral angles more than $1\frac{1}{2}$

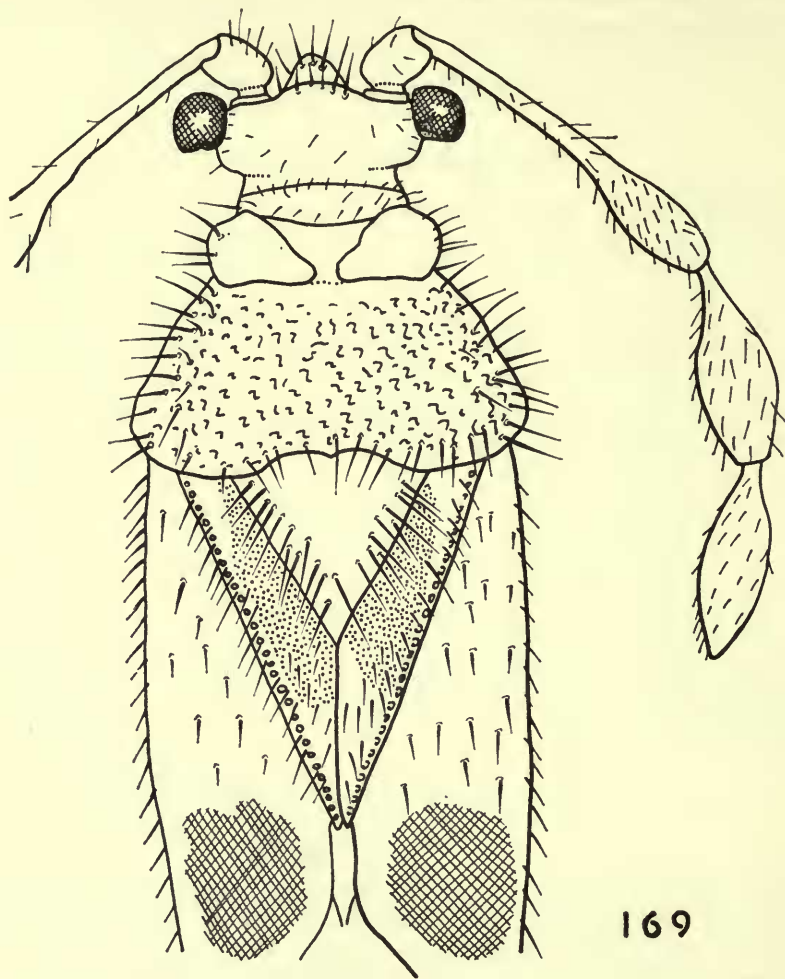


FIG. 169. Dorsum of *Villiersicoris sessensis* sp. n.

times as broad as it is long (49 : 30), and nearly three times as broad as across anterior collar (49 : 17); calli large, convex, prominent, extending to lateral margins of pronotum and projecting beyond; posterior margin of pronotum sinuate and concave in the middle. Scutellum finely rugosely punctate, moderately densely covered with long erect bristles near margins. Hemelytra covered with setigerous swellings, clavus and cuneus smooth, claval suture with a row of coarse punctures; membrane with a dense covering of minute, pale, scale-like pubescence. Fore femora narrowing

towards apices, hind femora distinctly thickened towards apices; legs densely covered with long, erect or sub-erect bristles. Abdomen with long setae. Length of body 7.8 mm., width across humeral angles 2.61 mm.

Colour. Body shiny. Head reddish-brown. Antennal segment I reddish-brown, the narrow base yellowish, towards apex somewhat fuscous; segment II fuscous to black, base narrowly and the swollen apical portion largely reddish-brown; segment III dark reddish-brown, almost black; segment IV black, with a reddish tinge. Pronotum and scutellum yellowish-brown. Hemelytra yellowish-brown; middle portion of clavus, base of corium obscurely, and cuneus, reddish-brown; apical one-quarter of corium fuscous; membrane smoky black, vein reddish-brown. Abdomen red, thoracic venter somewhat darker. Legs brownish-red; apical one-quarter to one-third of femora with fuscous markings; tibiae yellowish-brown, a band near base and apex brownish to fuscous. Pubescence pale in colour, a few fuscous ones on dark parts of antennal segment II, femora, and tibiae.

MALE. Unknown.

Holotype ♀. EAST AFRICA: Sesse Isles (on L. Victoria), iv. 1925 (C. D. H. Carpenter). In B.M.

Apart from the relatively shorter rostrum in *V. sessensis*, the new species may be distinguished from *V. holasi* Delattre (the type and only other species) as follows:

<i>V. holasi</i>	<i>V. sessensis</i>
1. Antennal segment II fuscous	. Segment fuscous, the apical swollen part reddish-brown.
2. Pronotum yellowish-brown, collar and calli reddish-brown	. Uniformly yellowish-brown.
3. Femora black	. The larger (basal) portion brownish-red.
4. Hind tibiae black, except narrowly at base	. Pale yellowish-brown, except for a dark band near base and another near apex.
5. Pubescence on femora and tibiae (only partly) black	. Mostly pale in colour.

Tribe MONALONIINI

EUCEROCORIS Westwood

1837. *Eucerocoris* Westwood, *Trans. R. ent. Soc. Lond.* 2: 21.

Up to the present study, eight species of the genus *Eucerocoris* had been described. Of these, two species (*E. basifer* Walker and *E. braconoides* Walker) and possibly a third species (*E. tumidiceps* Horváth) belong to a distinct genus, as revealed later in this paper. The remaining five species definitely belong to *Eucerocoris*, to which is now being added five new species described in the following pages.

RE-DESCRIPTION. Body long and slender; shiny, polished; dorsum glabrous, except for the minute pubescence along the edge of hemelytral membrane. Head transverse; vertex convex, topmost part somewhat above eyes, with a median longitudinal sulcus; anteclypeus distinctly inflated, clearly marked off from frons, anterior margin as seen in profile straight except at base. Eyes removed from anterior margin of pronotum, viewed from above appear rounded, from the side appear to

occupy more than half height of head. Rostrum extends far beyond apices of fore coxae. Antennae longer than body, inserted very close to eyes; insertion area very large, oval or rounded, at least half as large in diameter as length of inner margin of an eye; segment I shortly bent at base, and here thickened a little, segment club-shaped near apex; segments II to IV slender, linear, about equally thick; antennae covered by three types of hairs: short erect hairs, long erect hairs, and short sub-erect hairs. Pronotum with a distinctly narrowed anterior lobe; posterior lobe convex, declivous, posterior margin straight; calli obscure or distinct, confluent, somewhat swollen, reaching sides of pronotum; collar thick, thicker than length of a callus; anterior acetabula visible from above. Scutellum almost flattened, nearly equilateral, a little broader than long, apex blunt; mesoscutum a little exposed. Hemelytra somewhat curved inwards laterally in the middle; cuneus very long and narrow; apex of membranal cell sharply angular, extending distinctly beyond apex of cuneus. Legs long and slender; femora incrassate at apices; fore tibiae with a long spur-like projection at one end of tibial comb; tarsal claws strongly curved; femora and abdomen with a few scattered hairs, tibiae and tarsi with short abundant setae. Type-species: *Eucercoris nigriceps* Westwood. (The type is apparently lost; it is not at Oxford. But the original scanty description appears to fit in with the genus as described here.)

The present author recognizes two subgenera within *Eucercoris*, of which one is new. They may be differentiated as follows:

***Eucercoris* s. str.**

Type-species: *E. nigriceps* Westwood

1. Femora linear, at most weakly curved in the middle or curved only at base
2. Male last abdominal segment without a swollen projection
3. Distribution: Australia, New Guinea, Fiji

***Ragwelellus* subgen. n.**

Type-species: *E. peregrinus* sp. n.

- Femora distinctly bow-shaped in the middle.
- Last abdominal segment in male with a swollen projection or a conical swelling with a sharp point.
- Distribution: Solomon Islands.

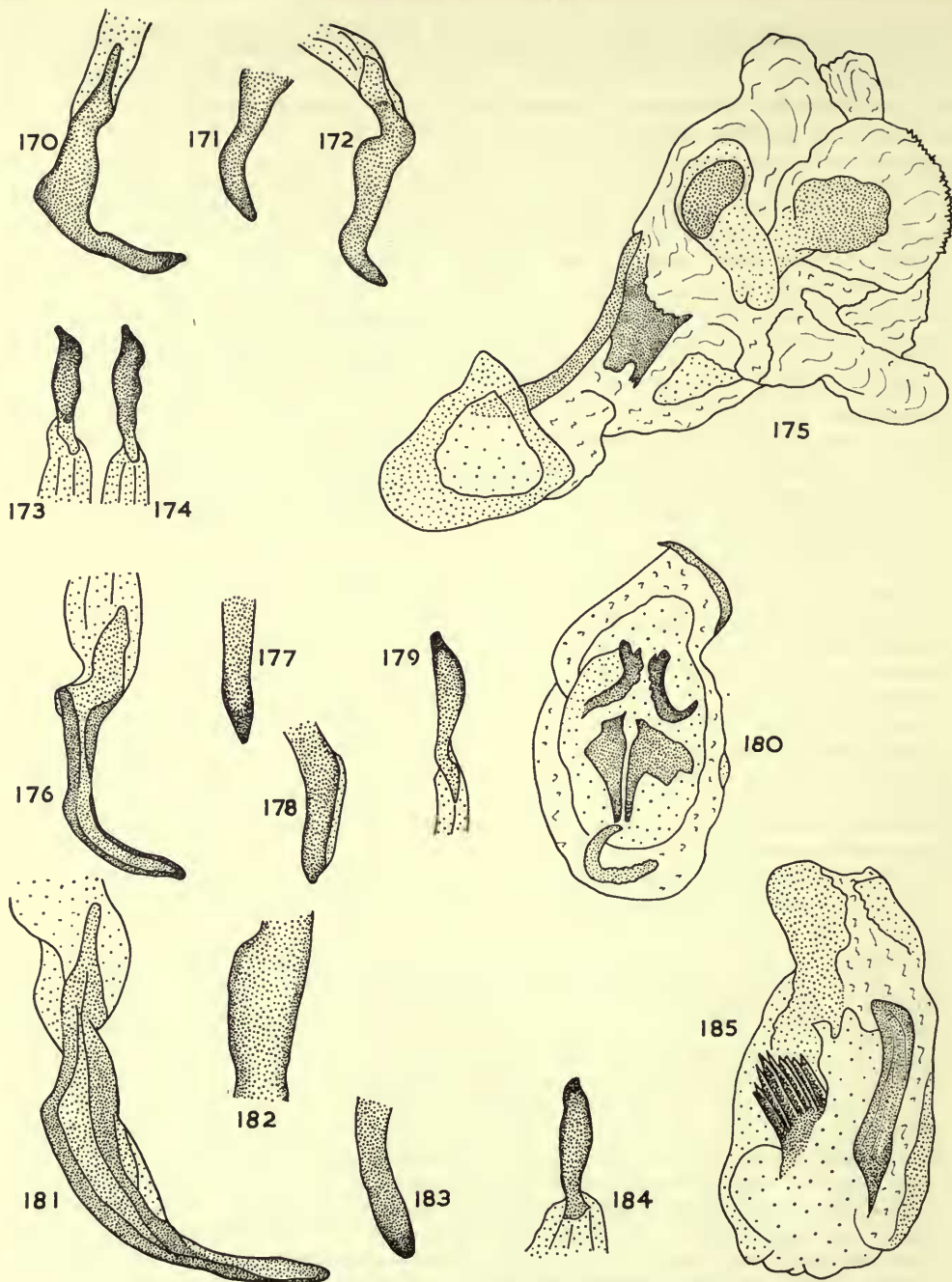
The male genitalia give the best distinguishing characters. The left paramere in the new subgenus has a distinct projection in the middle; the structure of the vesica is different; and the last abdominal segment exhibits a distinct protuberance.

KEY TO SPECIES OF *Eucercoris*¹

1. Femora markedly curved in the middle; length of cubital vein beyond apex of membranal cell at most $1\frac{1}{2}$ times length of distance between apex of cell and apex of membrane; last abdominal segment of male with a projection or cone-like prominence near dorsal lateral margin. Rostrum reaches middle of mesocoxae or beyond (**RAGWELELLUS** subgen. n.) 6
- Femora at most weakly curved; length of cubital vein beyond apex of membranal cell at least $1\frac{2}{3}$ times length of distance between apex of cell and apex of membrane; last abdominal segment of male without a projection or prominence (subgen. **EUCEROCORIS** Westwood) 2

¹ One species, *tumidiceps* Horváth, is not included in the key since its generic status is in doubt (see also discussion under *Rayieria* gen. n.).

2. Hemelytra black, with only small pale spots at base, membranal vein black; scutellum fuscous; head above antennal insertion black, below testaceous. (Locality unknown) *E. nigriceps* Westwood
- Head with extensive reddish or yellowish markings or entirely testaceous, membranal vein reddish; scutellum testaceous or reddish or fuscous suffused with red; head largely testaceous 3
3. Rostrum extends to middle of mesocoxae; pronotum about as long as broad; dorsum orange to blood red (except membrane). (New Guinea) *E. horvathi* Poppius
- Rostrum at most reaches bases of mesocoxae; pronotum distinctly broader than long; dorsum with extensive dark markings on head and hemelytra and sometimes also on scutellum 4
4. Antennal segments II and III with very long, dense, erect hairs, the latter five times as long as thickness of segment; segment III a little longer than segment I; cubital vein beyond apex of membranal cell more than $2\frac{1}{2}$ times length of the distance between apex of cell and apex of membrane; abdomen yellow, with apical one-third to half black. (Fiji) *E. thetis* Kirkaldy
- Antennal segments II and III with the longest hairs only about $1\frac{1}{2}$ times as long as thickness of segment; segment III shorter than segment I; cubital vein beyond apex of cell not equal in length to more than twice the distance between apex of cell and apex of membrane; abdomen testaceous or yellowish with reddish markings, no darker markings 5
5. Rostrum extends to bases of mesocoxae; antennal segment III much shorter than segment I by about one-third to half; pronotum and scutellum testaceous; corium very dark reddish fuscous, base paler; legs testaceous, femora towards apices and tibiae basally with black markings. (Australia) *E. suspectus* Distant
- Rostrum extends to middle of mesobasisternum; antennal segment III only slightly shorter than segment I; pronotum and scutellum fuscous to black, suffused with red, with a large yellowish area in the middle of pronotum; corium dark red, apical one-third and embolium pale yellow; femora and tibiae pale yellow, apices testaceous. (New Guinea) *E. festivus* Miller
6. Pronotal calli prominent, swollen, about as long as thickness of pronotal collar; rostrum reaches middle of mesocoxae; last abdominal segment in male with a cone-like prominence 7
- Calli almost obsolete, flattened, only about half as long as thickness of collar; rostrum extends to apices of mesocoxae; last abdominal segment in male with a relatively long projection on dorsal lateral margin (male of *E. propinquus* sp. n. unknown) 8
7. Head black; dorsum (except cuneus and membrane) uniformly testaceous; apical halves of femora and bases of tibiae with fuscous markings; venter testaceous. (Bougainville Is.) *E. kietae* sp. n.
- Head testaceous, anteclypeus dark red or fuscous; pronotum entirely testaceous or largely black, scutellum black or testaceous, hemelytra fuscous to black; femora and tibiae testaceous, without dark markings; abdomen with apical half fuscous. (Guadalcanal) *E. pallipes* sp. n.
8. Cubital vein beyond apex of membranal cell two-thirds length of distance between apex of cell and apex of membrane; pronotum orange, except for anterior half of collar and a large band on either side of posterior lobe. (Ysabel) *E. vittatus* sp. n.
- Cubital vein beyond apex of cell at least $1\frac{1}{2}$ times length of distance between apex of cell and apex of membrane; pronotum black, only calli, posterior margin of collar, and sometimes a median band on posterior lobe, testaceous 9
9. Apical three-fifths of femora and basal three-fifths of tibiae black. (Guadalcanal) *E. propinquus* sp. n.
- Apical two-fifths of femora and only extreme bases of tibiae black. (Ysabel, Bougainville Is.) *E. peregrinus* sp. n.



FIGS. 170-185. Male genitalia in the subgenus *Eucrocoris* Westwood. 170-175: *E. thetis* Kirkaldy. 170, left paramere; 171, the same: inner aspect of apex; 172, the same: inner aspect with basal portion flat on slide; 173 and 174, right paramere; 175, everted aedeagus in dorsal view. 176-180: *E. festivus* Miller. 176, left paramere; 177, the same: inner aspect of apex; 178, the same: inner lateral

Eucerochoris (Eucerochoris) thetis Kirkaldy

(Text-figs. 170-175)

1908. *Eucerochoris thetis* Kirkaldy, *Proc. Linn. Soc., N.S.W.* 33 : 376.

MALE. *Structure.* Head across eyes $1\frac{1}{2}$ times as broad as median length (62 : 40), and four-fifths as wide as pronotum at base (62 : 78) ; vertex about twice as broad as an eye (30 : 16). Eyes occupying three-quarters of height of head ; inner margin emarginate. Rostrum extends to bases of middle coxae. Antennal sclerites occupying middle two-thirds of length of inner margin of eyes ; relative lengths of antennal segments, 164 : 306 : 180 : (IV lost) ; segment I with nearly apical one-quarter club-shaped, segment sparsely covered with short erect hairs ; segment II densely covered with long erect hairs, the latter five times as long as thickness of segment, segment with small swellings at bases of hairs, near apex also with minute transverse striations ; segment III densely covered with similar long hairs, all the hairs arising from small swellings, segment also with minute transverse annulations especially distinct on apical one-quarter. Pronotum across humeral angles $1\frac{1}{3}$ times as wide as long in the middle (78 : 58), and twice as broad as across anterior margin (78 : 40) ; calli almost obsolete. Scutellum with transverse, somewhat obscure, rugosities. Section of cubital vein between apical angles of membranal cell and the point where it joins the cuneus $2\frac{2}{3}$ times as long as the distance between apical angle of cell and apex of membrane (51 : 19). Genitalia illustrated in Text-figs. 170-175. Length of body 7.0-7.15 mm., width across humeral angles 1.35 mm.

Colour. General colour testaceous. Antennal segment I brownish with a reddish tinge, the thickened base yellowish, paler also near apex ; segment II dark brown to fuscous, darker towards apex, base narrowly testaceous ; segment III black ; pubescence whitish. Pronotum and scutellum testaceous. Hemelytra fuscous with a reddish tinge, base of clavus and corium testaceous, cuneus more reddish ; membrane smoky black, vein reddish. Thoracic venter testaceous ; abdomen yellow, apical one-third to half black. Legs testaceous, tibiae more yellowish, apices of tibiae and tarsi entirely fuscous. Pubescence on venter and legs pale, those on the dark spots of legs also dark in colour.

FEMALE. The only specimen examined is damaged. But colour, in general, agrees with that of the male.

MATERIAL EXAMINED. FIJI : Naurosi, 1 ♂, 1 ♀, x. 1920 ; 1 ♂, v. 1921 (all R. Veitch). Lototi, 1 ♂, 19.xii.1920 (W. Greenwood). Narina, 1 ♂, 14.ii.1940 (R. A. Lever). In B.M.

The peculiar covering of hairs on the antennae, the peculiar sculpturing on the dorsum, and the structure of the male genitalia makes the recognition of *E. thetis* easy. Although it is undoubtedly a good *Eucerochoris* species, it is however rather isolated from the other four species of the subgenus.

aspect of apex ; 179, right paramere ; 180, aedeagus : ventral view. 181-185 : *E. suspectus* Distant. 181, left paramere ; 182, the same : inner aspect of base ; 183, the same : inner aspect of apex ; 184, right paramere ; 185, aedeagus : ventral view.

Eucerochoris (Eucerochoris) suspectus Distant

(Text-figs. 181-185)

1904. *Eucerochoris suspectus* Distant, *Ann. Mag. nat. Hist.* (7) 13 : 271.

MALE. Structure. Head across eyes twice as broad as median length (78 : 39), and about four-fifths as wide as across humeral angles of pronotum (78 : 94) ; vertex nearly twice as broad as an eye (35 : 19). Eyes occupy two-thirds of height of head, inner margin emarginate. Rostrum reaches bases of mesocoxae. Relative lengths of antennal segments, 225 : 288 : 168 : (IV lost) ; segment I densely covered with very short erect hairs, rather gradually thickening towards apex, this club-shaped length being about one-third length of segment ; segment II about $1\frac{1}{2}$ times as long as thickness of segment, densely covered with very short erect hairs, the latter more sub-erect towards apex, also with scattered erect hairs ; and segment III densely covered with sub-erect hairs, and scattered longer hairs (as on segment II), also with minute transverse annulations ; antennal sclerites occupy middle two-thirds of length of inner margin of eyes. Pronotum across humeral angles $1\frac{1}{4}$ times as wide as long in the middle (94 : 71), and twice as wide as across anterior margin (94 : 45) ; calli rather prominent, somewhat separated from each other by a median flattening. Scutellum with obscure transverse rugosities. Hemelytral membrane with cubital vein between apical angles of cell and the point where it joins cuneus about $1\frac{2}{3}$ times as long as the distance between apical angle of cell and membranal apex (38 : 24). Genitalia illustrated in Text-figs. 181-185. Length of body 8.3-9.7 mm., width across humeral angles 1.57-1.66 mm.

Colour. General colour testaceous. Antennae black, with obscure reddish tinge, or reddish fuscous ; thickened base of segment I testaceous. Hemelytra very dark reddish fuscous, base of clavus testaceous, base of corium and embolium largely ochraceous or yellowish, cuneus more reddish ; membrane infumate, vein red. Venter testaceous. Coxae and femora, two broad bands on apical halves of hind femora, fuscous to black ; bases of tibiae broadly black, basal half to two-thirds dark testaceous, the rest testaceous ; tarsi fuscous. Pubescence on body and sub-erect hairs on antennae pale, erect hairs on antennae yellowish-brown or darker.

FEMALE. Structure. Head nearly $1\frac{2}{3}$ times as wide as long (79 : 46) ; vertex more than twice as wide as an eye (42 : 18). Relative lengths of antennal segments, 245 : 288 : 160 : 77 ; segment I and basal half of segment II with only scattered, short, erect hairs ; segment IV pubescent as on segment III. Pronotum with the following relative dimensions of breadth across humeral angles, median length, and width across pronotal collar, of 108 : 76 : 46. Cubital vein between apical angle of membranal cell and the point where it joins cuneus twice as long as distance between apical angle of cell and apex of membrane (49 : 24). Length of body 9.7-10.0 mm., width across humeral angles 2.00-2.05 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male, except : head sometimes black ; antennae sometimes extensively testaceous, except for a black band near base of segment I, and segments III and IV which are fuscous ; basal half of abdomen yellowish-white, base and apical half black ; legs usually more extensively dark, apical halves of

femora, bases of fore tibiae broadly, basal halves of middle tibiae, and basal two-thirds of hind tibiae, all being black.

MATERIAL EXAMINED. AUSTRALIA: Queensland, Townsville, 3 ♂ (including holotype), 3 ♀ (including paratype); 1 ♀, vi.1903; 1 ♀, ix.1903 (all F. P. Dodd). Brisbane, 1 ♀, 28.i.1913; 1 ♂ 1 ♀, 18.v.1925 (all H. Hacker). Bribie Is., 1 ♀, xii.1922 (H. Hacker). All in B.M.

The most notable features of *E. suspectus* are the form of the left paramere in the male, which is very large and curves only gently, and the cuticularized appendages in the vesica. The structure of the antennae is also notable, particularly in the type of pubescence and the relative lengths of the segments. The colour is rather variable; and more collecting may reveal a wider variation still.

Eucrocoris (Eucrocoris) festivus Miller

(Text-figs. 176-180)

1954. *Eucrocoris festivus* Miller, *Bull. ent. Res.* 45 (4) : 705, 5 figs.

MALE. Structure. Head across eyes $1\frac{1}{2}$ times as broad as long in the middle (48 : 30), and three-fifths as wide as across humeral angles of pronotum (25 : 12). Eyes occupy two-thirds of height of head; inner margin emarginate. Rostrum reaches middle of mesobasisternum, about mid-way between bases of fore and middle coxae. Relative lengths of antennal segments, 140 : 234 : 135 : 58; segment I gradually thickening towards apex, the clavate portion about one-quarter to one-third of length of segment, with very sparse short erect hairs; segment II densely covered with long erect hairs, about $1\frac{1}{2}$ times as long as segment is thick, and also with short sub-erect hairs on apical one-fifth to one-quarter, the latter with minute nodules in addition; segments III and IV densely covered with short sub-erect hairs and isolated long erect hairs, with minute dense transverse annulations; antennal sclerites occupy middle two-thirds of length of inner margin of eyes. Pronotum across humeral angles $1\frac{1}{2}$ times as broad as long in the middle (79 : 58), and about $2\frac{1}{2}$ times as wide as across anterior margin (79 : 32); calli almost obsolete; no suture or depression demarcating collar. Scutellum smooth. Corium with dense, irregular, minute punctures; cubital vein beyond apical angle of membranal cell about $1\frac{2}{3}$ times as long as the distance between apical angle of cell and apex of membrane (33 : 19); apex of cell acutely elongate. Genitalia illustrated in Text-figs. 176-180. Length of body 4.0-4.5 mm., width across humeral angles 1.30 mm.

Colour. Head red; vertex suffused with black, in the middle with an elongate yellowish spot; anteclypeus black; gular region yellowish. Antennae black, segment I with reddish suffusion, or antennae extensively or almost entirely testaceous; pubescence brownish to black. Pronotum and scutellum fuscous or black, suffused with red; pronotum with large yellowish area in the middle, reflexed portion pale yellow. Clavus yellow, apex and basal one-third dark red, inner margin bright red in the middle; corium dark red, apical one-third pale yellow (except the bright red inner and apical margins, and the dark red outer margin); cuneus red, basal half of outer margin pale yellow; membrane infumate, vein red. Venter yellowish, abdomen

with extensive reddish markings. Legs pale yellow; apices of femora and tibiae and basal segment of tarsi testaceous, otherwise tarsi black. Pubescence on venter and legs pale.

FEMALE. Structure. Head nearly $1\frac{1}{2}$ times as broad as long (51 : 35); vertex $2\frac{1}{2}$ times as wide as an eye (28 : 11). Relative lengths of antennal segments, 156 : 227 : 139 : (IV lost); segment II sparsely covered with erect hairs, dense covering of sub-erect hairs on apical one-fourth. Length of body 5.6 mm., width across humeral angles 1.50 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

MATERIAL EXAMINED. NEW GUINEA : Aiyura, 5 ♂, 7 ♀ on *Cinchona*, vi. 1953 (R. Carne). In B.M.

E. festivus is very close to *E. horvathi*; and from the description it appears that *E. festivus* is only distinguishable in that it is smaller in size, its pronotum is distinctly broader than long, the relative lengths of antennal segments are different, its rostrum is much shorter (in *E. horvathi* it reaches middle of mesocoxae), and in the colour markings. The character mentioned by Miller (1954 : 705), that the femora are straight and not curved, is not valid; in fact the femora are feebly curved, as can be seen in the hind femora.

Eucerochoris (Ragwelellus) peregrinus sp. n.

(Text-figs. 186–193)

MALE. Structure. Head across eyes nearly twice as broad as long in the middle (60 : 34), and four-fifths as wide as pronotum across humeral angles (60 : 75); vertex twice as wide as an eye (30 : 15). Eyes occupy two-thirds of height of head; inner margin almost straight, only weakly emarginate. Rostrum reaches apices of middle coxae. Relative lengths of antennal segments, 199 : 265 : 183 : 83; segment I gradually clavate towards apex, the thickened region about one-quarter of length of segment, segment almost glabrous with only a few short erect hairs; segment II with a few isolated short erect hairs, apical two-thirds with a dense covering of short sub-erect hairs, scattered erect hairs a little longer than the thickness of segment, this portion of segment also with minute transverse annulations; segments III and IV with pubescence and sculpturing as on segment II at apex; antennal sclerites occupy more than half of middle length of inner margin of eyes (17 : 29). Pronotum across humeral angles $1\frac{1}{3}$ times as broad as median length (75 : 56), and nearly $2\frac{1}{2}$ times as broad as across anterior margin (75 : 31); calli flattened, delimited by a shallow suture posteriorly; collar very thick, nearly twice as thick as length of callus. Scutellum smooth. Cubital vein beyond apical angle of membranal cell about $1\frac{1}{3}$ times as long as the distance between apical angle of cell and apex of membrane (30 : 25). Last abdominal segment with a relatively long swollen projection on the dorsal lateral aspect. Genitalia illustrated in Text-figs. 186–193. Length of body 7.15 mm., width across humeral angles 1.35 mm.

Colour. General colour bright orange. Head, antennae, pronotal collar largely, posterior lobe of pronotum except a broad median band, apex of corium, cuneus and membrane entirely (including veins), apical two-fifths of femora, bases of tibiae,

and last two tarsal segments, all black. Abdomen sometimes with irregular fuscous markings. Tibiae yellowish-brown or testaceous. Pubescence shiny white or pale.

FEMALE. Structure. Head $1\frac{1}{3}$ times as broad as long (64 : 36) ; vertex twice as wide as an eye (32 : 16). Relative lengths of antennal segments, 190 : 260 : 180 : (IV lost). Relative dimensions of width across humeral angles of pronotum, median lengths of the latter, and width of anterior margin, 87 : 70 : 32. Cubital vein beyond apical angle of membranal cell $1\frac{1}{2}$ times as long as distance between apical angle of cell and apex of membrane (35 : 25). Last abdominal segment without a projection. Length of body 8.55 mm., width across humeral angles 1.60 mm. Otherwise, structure as in the male.

Colour. Similar to that of the male.

Holotype ♂. SOLOMON ISLANDS : Ysabel, Gatere, 19.ii.1956 (E. S. Brown). **Allotype** ♀. Same data as for holotype. **Paratypes** 4 ♂. Same data as for holotype. All in B.M.

This species was recognized in 1956 by Mr. N. C. E. Miller as a new species of *Eucerochoris*, but he did not actually describe and name it.

***Eucerochoris (Ragwelellus) peregrinus numanumae* subsp. n.**

(Text-figs. 191-193)

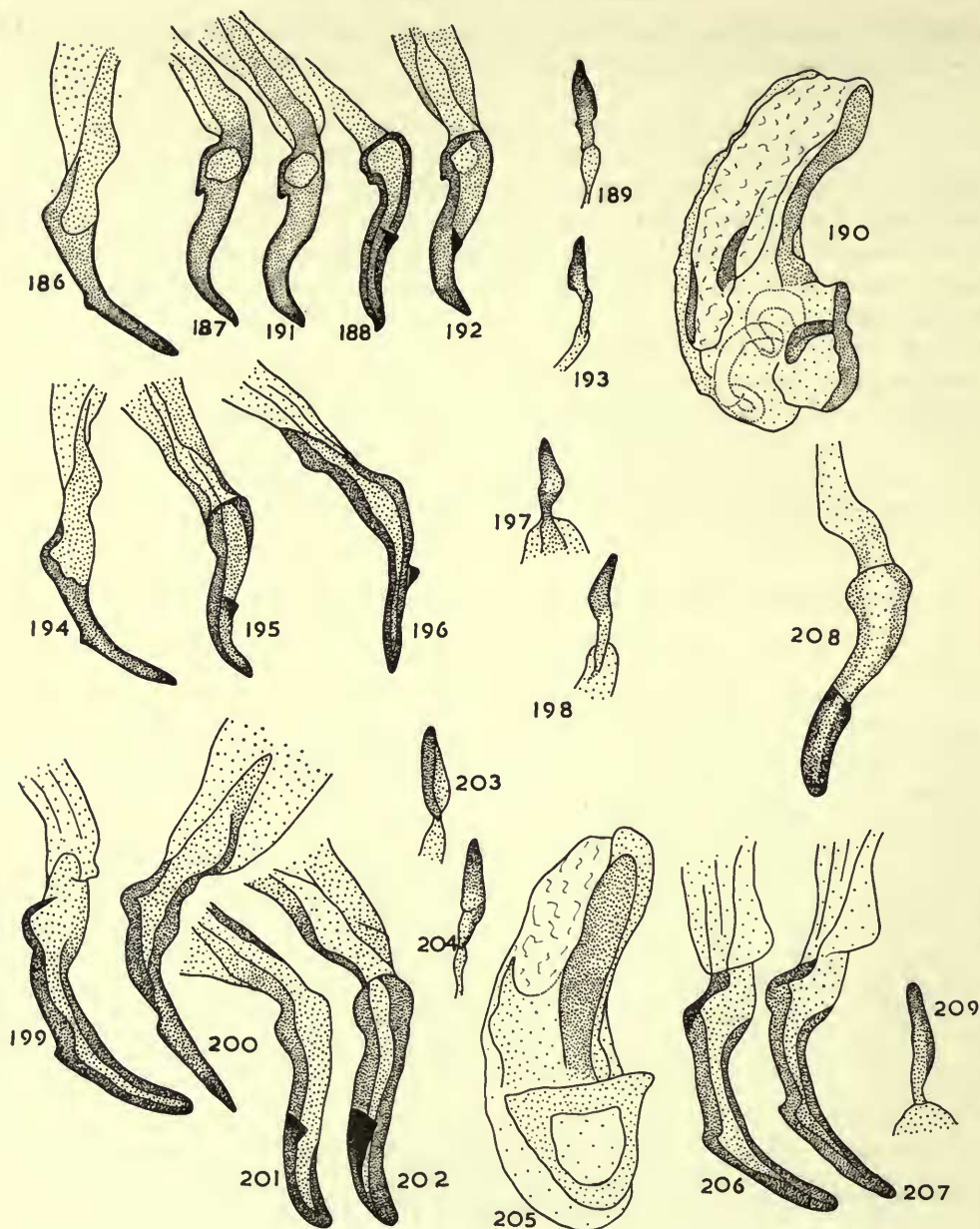
There are two specimens from the island of Bougainville that differ in colour and in external structure, to some extent, from the typical *E. (R.) peregrinus*, but whose male genitalia is almost identical with that of the latter. The present author hesitates to recognize the two specimens as representing a distinct species ; and it is here regarded as a subspecies of *peregrinus*.

FEMALE. Structure. Head a little more than $1\frac{1}{2}$ times as broad as long (64 : 38) ; vertex about $2\frac{1}{3}$ times as wide as an eye (32 : 14). Inner margin of eyes emarginate, more strongly so than in *peregrinus peregrinus*. Relative lengths of antennal segments, 189 : 250 : 160 : 69 ; segment I with clavate apical region less than one-fourth of length of segment. Pronotum across humeral angles $1\frac{1}{4}$ times as broad as long in the middle (86 : 67), and about $2\frac{1}{4}$ times as broad as anterior margin (86 : 38). Cubital vein beyond apex of membranal cell slightly longer than distance between apical angle of cell and apex of membrane (31 : 27). Length of body 7.75 mm., width across humeral angles 1.51 mm.

Colour. As in *peregrinus peregrinus*, except : middle half of antennal segment I and base of segment II broadly brownish ; posterior half of pronotal collar irregularly orange, posterior lobe entirely black ; apices of femora dark brown or fuscous (only apical one-fifth or less).

MALE. Structure. Head about $1\frac{2}{3}$ times as broad as long ; vertex $2\frac{1}{2}$ times as wide as an eye (32 : 13). Relative lengths of antennal segments, 190 : 260 : 180 : (IV lost). Pronotum with relative dimensions of width across humeral angles, median length, and width of anterior margin, of 76 : 59 : 34. Genitalia illustrated in Text-figs. 191-193. Otherwise, structure as in the female.

Colour. Similar to that of the female.



FIGS 186-209. Male genitalia in *Ragwelellus* subgen. n. 186-190: *E. peregrinus* *peregrinus* sp. and subsp. n. 186, left paramere; 187, the same: base flat on slide, inner aspect; 188, the same: inner aspect of apex. 189, right paramere; 190, aedeagus: right lateral view. 191-193: *E. peregrinus* *numanumae* sp. and subsp. n. 191, left paramere: base flat on slide, inner aspect; 192, the same: inner aspect of apex; 193, right paramere. 194-198: *E. vittatus* sp. n. 194, left paramere; 195, the same: base flat on slide, inner aspect; 196, the same: inner aspect of apex; 197 and 198, right paramere. 199-205: *E. pallipes* sp. n. 199, left paramere; 200, the same: more lateral view; 201 and 202, the same: inner aspect of apex; 203 and 204, right paramere; 205, aedeagus. 206-209: *E. kietae* sp. n. 206 and 207, left paramere; 208, the same: inner aspect of apex; 209, right paramere.

Holotype ♀. SOLOMON ISLANDS: Bougainville Is., Numa Numa, 31.v.1956 (E. S. Brown). *Paratype* ♂. Data as above, 1.vi.1956. Both in B.M.

***Eucrocoris (Ragwelellus) propinquus* sp. n.**

FEMALE. Structure. Head nearly twice as wide as long (64 : 35), and two-thirds as wide as pronotum across humeral angles (64 : 90); vertex twice as wide as an eye (33 : 15). Eyes occupy three-quarters of height of head; inner margin almost straight, only weakly emarginate. Rostrum reaches nearly apices of middle coxae. Relative lengths of antennal segments, 221 : 286 : 202 : (IV lost); segment I with apical one-quarter clavate, segment almost glabrous, except for minute very sparse hairs and a few short hairs at apex; segment II with apical one-quarter to one-third densely covered with short sub-erect hairs and scattered longer erect hairs, the latter slightly longer than thickness of segment, the rest of the segment sparsely covered with minute hairs; segment III densely covered with similar hairs as on apical portion of segment II; antennal sclerites occupy two-thirds of middle length of inner margin of eyes. Pronotum across humeral angles $1\frac{1}{2}$ times as broad as long in the middle (90 : 75), and more than $2\frac{1}{2}$ times as broad as anterior margin (90 : 35); calli distinct, somewhat swollen, about $1\frac{1}{2}$ times as thick as length of callus. Scutellum with obscure, fine, transverse rugosities. Cubital vein beyond apex of membranal cell only slightly longer than distance between apex of cell and apex of membrane (35 : 32). Length of body 8.65 mm., width across humeral angles 1.64 mm.

Colour. General colour orange. Head, antennae, pronotum (except calli, posterior margin of collar, and a broad median band on posterior lobe), apex of corium, cuneus and membrane wholly, apical three-fifths of femora, basal three-fifths of tibiae, and last two segments of tarsi, black; tibiae and tarsi otherwise stramineous. Pubescence on legs and erect hairs on antennae yellowish-brown, sub-erect hairs on antennae shiny white.

MALE. Unknown.

Holotype ♀. SOLOMON ISLANDS: Guadalcanal, Sutakiki, 27.vi.1956 (E. S. Brown). *Paratype* ♀. Same locality, Gold Ridge, 30.vi.1956 (E. S. Brown). Both in B.M.

E. propinquus closely resembles *E. peregrinus*. But the relative lengths of antennal segments are entirely different, the cubital vein in *E. propinquus* falls short of the apex of the hemelytral membrane by a longer distance, the femora are much darker in colour, and the tibiae are extensively black.

***Eucrocoris (Ragwelellus) vittatus* sp. n.**

(Text-figs. 194-198)

MALE. Structure. Head $1\frac{2}{3}$ times as broad as long (54 : 33), and four-fifths as broad as pronotum across humeral angles (54 : 70); vertex nearly twice as wide as an eye (26 : 14). Eyes occupy about three-quarters of height of head; inner margin emarginate. Rostrum reaches apices of middle coxae. Relative lengths of antennal segments, 164 : (II to IV lost); segment I with less than one-fifth thickened, segment

covered with isolated minute hairs ; antennal sclerites occupy three-fifths of middle length of inner margin of eyes. Pronotum across humeral angles $1\frac{1}{4}$ times as broad as long in the middle (70 : 55), and $2\frac{1}{2}$ times as broad as anterior margin (70 : 28); calli somewhat distinct. Membranal cell with apex only a little beyond apex of cuneus, cubital vein beyond apex of cell about two-thirds as long as the distance between apex of cell and apex of membrane (25 : 39). Last abdominal segment with a relatively long swollen projection on dorsal lateral margin (as in *E. peregrinus*). Genitalia illustrated in Text-figs. 194-198. Length of body 6.35 mm., width across humeral angles 1.24 mm.

Colour. General colour orange. Head, a large band on either side of posterior lobe of pronotum, anterior half of collar except a middle streak, apex of corium, cuneus and membrane entirely, apical one-quarter of femora, bases of tibiae, and last tarsal segment, all black ; base of head testaceous ; antennal segment I fuscous ; tibiae and tarsi stramineous.

FEMALE. Unknown.

Holotype ♂. BRITISH SOLOMONS : Sa. Isabel, ii. 1933 (R. J. A. Lever). In B.M.

E. vittatus is very closely related to *E. peregrinus* ; for instance, the male genitalia in the two species are very similar. *E. vittatus* may, however, be differentiated in that the apex of the membranal cell only surpasses the apex of the cuneus by a very short length, the head is narrower, the first antennal segment is shorter and only a short length of it is thickened, the pronotum has a very broad orange band in the middle, and in that the anterior lobe of the pronotum is extensively orange.

Eucercoris (Ragwelellus) pallipes sp. n.

(Text-figs. 199-205)

MALE. *Structure.* Head $1\frac{1}{2}$ times as broad as long (68 : 41), and about three-quarters as broad as pronotum across humeral angles (68 : 88). Eyes occupy about three-quarters height of head ; inner margin deeply emarginate. Rostrum extends to middle of mesocoxae. Relative lengths of antennal segments, 248 : 323 : 183 : 94 ; segment I with about apical one-fifth thickened, with very sparse short erect hairs, less sparse towards apex ; segment II with basal one-third sparsely covered with short erect hairs and longer erect hairs, the latter shorter than thickness of segment, apical two-thirds densely covered with short erect hairs (becoming sub-erect towards apex) and isolated longer erect hairs, apex with fine annulations ; segments III and IV very densely covered with short sub-erect hairs and scattered long erect hairs, the latter at most twice as long as thickness of segment, and also covered with fine transverse annulations and minute swellings ; antennal sclerites occupy two-thirds of middle length of inner margin of eyes. Pronotum across humeral angles $1\frac{1}{4}$ times as broad as long in the middle (87 : 68), and about $2\frac{1}{4}$ times as broad as anterior margin (87 : 39) ; calli prominent, swollen, and more or less cone-like, separated in the middle by a depression ; collar with a distinct posterior suture at the sides, in the middle obsolete, about as thick as length of callus. Scutellum finely transversely rugose, except at apex. Cubital vein beyond apex of membranal cell $1\frac{1}{2}$ times as long as distance between apex of cell and apex of membrane (35 : 25).

Last abdominal segment with a prominent cone-like swelling (no projection as in *E. peregrinus*). Genitalia illustrated in Text-figs. 199–205. Length of body 8.0 mm., width across humeral angles 1.53 mm.

Colour. Head testaceous, anteclypeus dark red or fuscous. Antennae black, segment I and basal one-third of segment II testaceous or reddish. Pronotum testaceous entirely, or black with collar at the sides, calli extensively, and ventral margin of inflexed portion largely testaceous. Scutellum black with base narrowly testaceous, or entirely testaceous. Hemelytra fuscous to black, veins dark reddish. Venter and legs testaceous; apical half of abdomen with extensive fuscous markings; tibiae towards apices and first tarsal segment pale yellowish, last two tarsal segments fuscous to black. Pubescence pale.

FEMALE. Structure. Head nearly twice as broad as long (76 : 41); vertex twice as wide as an eye (38 : 19). Eyes occupy two-thirds of height of head. Relative lengths of antennal segments, 260 : 334 : 190 : 92; only apical half of segment II densely pubescent. Relative dimensions of width across humeral angles of pronotum, median length of the latter, and width of anterior margin, 113 : 81 : 43. Cubital vein beyond apex of membranal cell $1\frac{1}{2}$ times as long as distance between apex of cell and apex of membrane (37 : 31). Last abdominal segment without a swelling. Length of body 9.2 mm., width across humeral angles 2.03 mm.

Colour. Similar to that of the male.

Holotype ♂. SOLOMON ISLANDS: Guadalcanal, Rua Vatu, 12.x.1956 (E. S. Brown). *Allotype* ♀. Guadalcanal, Terere, 30.iii.1955 (E. S. Brown). *Paratypes.* Guadalcanal, 1 ♂, ii. 1932; Guadalcanal, Lunga, 1 ♂; same locality, 1 ♂, 9.vi.1935 (all R. A. Lever). All in B.M.

E. pallipes and the next species (*E. kietae*) apparently form a group within the subgenus *Ragwelellus* distinct from the three other species of the subgenus (*peregrinus*, *propinquus*, and *vittatus*). The two species may be distinguished by the presence of a cone-like prominence on the last abdominal segment of the male (instead of a long projection), by the swollen, larger, and quite distinct pronotal calli, by the deeply emarginate inner margin of eyes, and by the more robust body.

Euceroctis (Ragwelellus) kietae sp. n.

(Text-figs. 206–209)

MALE. Structure. Head twice as wide as long (69 : 35), and about five-sixths as broad as pronotum across humeral angles (69 : 85); vertex twice as wide as an eye (34 : 17). Eyes occupy three-fourths of height of head; inner margin deeply emarginate. Rostrum extends to middle of mesocoxae. Relative lengths of antennal segments, 228 : (II to IV lost); segment I rather densely covered with short erect hairs, apical one-sixth thickened. Pronotum across humeral angles a little less than $1\frac{1}{2}$ times as broad as long in the middle (85 : 70), and about $2\frac{1}{2}$ times as broad as anterior margin (85 : 37); calli prominent, distinct, cone-like (though less prominent than in *pallipes*), separated in the middle by a depression; collar about as thick as length of callus, with a short suture on either side posteriorly. Scutellum finely

transversely rugose, except at apex. Cubital vein beyond apex of membranal cell about $1\frac{1}{2}$ times as long as distance between apex of cell and apex of membrane (35:24). Last abdominal segment with a prominent cone-like swelling (as in *pallipes*). Genitalia illustrated in Text-figs. 206–209. Length of body 8.35 mm., width across humeral angles 1.48 mm.

Colour. General colour testaceous. Head black. Antennal segments I and II fuscous to black, middle of segment I and base of segment II broadly suffused with red or testaceous. Cuneus dark red, fuscous towards apex; membrane infumate, vein red. Apical halves of femora with two fuscous bands; tibiae fuscous basally; tibiae and tarsi pale yellowish, last two tarsal segments black. Pubescence pale in colour.

FEMALE. Unknown.

Holotype ♂. SOLOMON ISLANDS: Bougainville Is., Kieta, v. 1934 (J. L. Froggatt).

E. kietae is very closely allied to *E. pallipes*, and the male genitalia are very similar in structure. The first antennal segment is, however, shorter, and the pronotal calli are less prominent; *E. kietae* may also be readily distinguished by the colour, particularly by the extensively pale hemelytra, and the dark femora and tibiae.

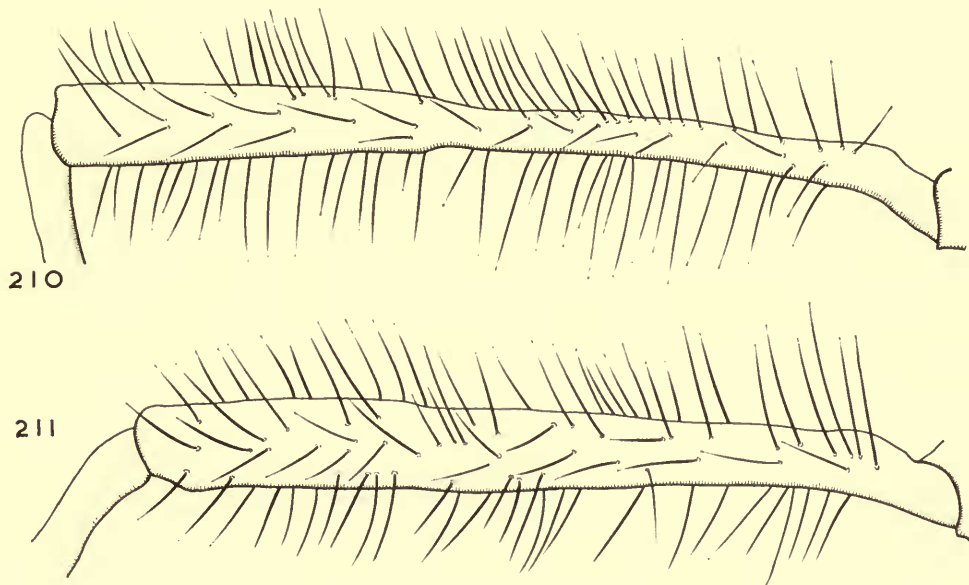
RAYIERIA gen. n.

Two species definitely belong to this genus, *Eucerochoris braconoides* and *Eucerochoris basifer*, both described by Walker in 1873. The most important characters that distinguish these two species from *Eucerochoris*, as re-defined in the present work are: (1) the bristly body and appendages in the new genus, (2) the swollen and projecting frons, (3) the swollen and very large pronotal collar, and (4) the very short rostrum. Although the male genitalia in both species has not been examined, there is no doubt that the two species represent a new genus, as described below.

Another species, *Eucerochoris tumidiceps* Horváth, appears to belong to *Rayieria*, although Horváth (1902: 610) stated that "the antennae and legs (are) not hirsute." He did not mention pubescence on the body either, although he noted that *E. tumidiceps* is allied to *E. braconoides*.

DESCRIPTION. Body long and slender; body and appendages shiny, densely covered with long, pale, erect, seta-like hairs. Head somewhat transverse; vertex distinctly convex, projecting above eyes, posteriorly with a median sulcus; frons swollen between bases of antennae (Text-figs. 212 and 213); anteclypeus moderately inflated, delimited from frons by a transverse suture, outline of anterior margin straight as seen in profile; neck distinct (Text-figs. 214 and 215); eyes far removed from anterior margin of pronotum, viewed from the side appear to occupy about half height of head, inner margin very nearly linear. Rostrum extends nearly to apices of fore coxae. Antennae longer than body; antennal sclerites very large, oval in shape, adjacent to eyes, occupy about three-quarters of middle length of inner margin of eyes; segment I shortly bent at base, thickened towards apex (Text-figs. 210–211), the rest of the antennae thinner; segment I smooth, remaining segments with minute swellings. Anterior lobe of pronotum distinctly narrower than posterior lobe; the latter convex and declivous; calli distinct, convex, separated in the middle

by a flattening, reaching sides of pronotum ; collar very large and inflated (Text-figs. 214 and 215), markedly thicker than posterior femur at apex ; posterior margin straight ; anterior acetabula visible from above. Scutellum finely, almost obscurely, transversely rugose, disc slightly swollen, apex somewhat rounded, about three-quarters as long as broad ; mesoscutum a little exposed. Hemelytra curved inwards



FIGS. 210 and 211. First antennal segment in *Rayieria*. 210, *R. basifer* (Walker) ; 211, *R. braconoides* (Walker).

laterally in the middle ; cuneus narrow, but rather short ; membranal cell with angular apex, the latter distinctly surpassing apex of cuneus. Legs long and slender ; hind femora incrassate apically ; for tibiae with a short, spur-like projection at one end of tibial comb ; tarsal claws gently curved, more strongly curved at apex. Type-species : *Eucerochoris basifer* Walker.

***Rayieria basifer* (Walker) comb. n.**

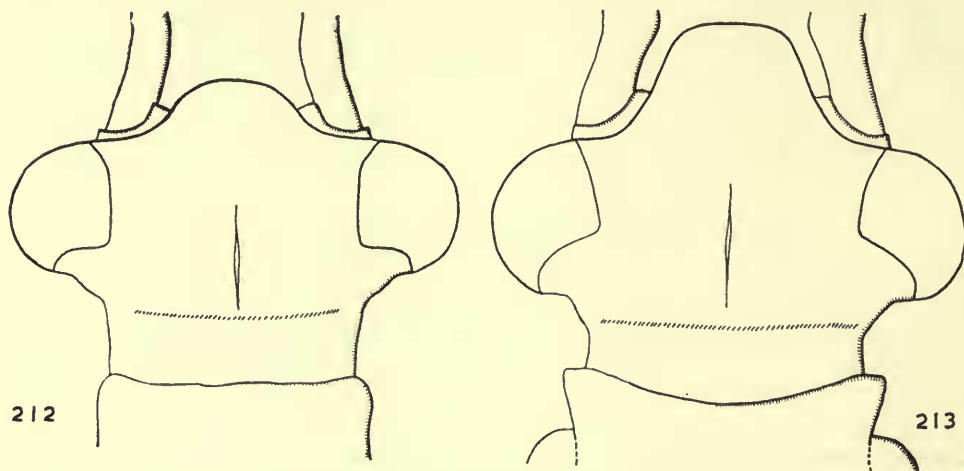
(Text-figs. 210, 212, and 214)

1873. *Eucerochoris basifer* Walker, *Cat. Hem. Het.* 6 : 164.

FEMALE. Structure. Head $1\frac{3}{4}$ times as broad as long (74 : 43), and two-thirds as broad as pronotum across humeral angles (74 : 113) ; vertex $2\frac{1}{2}$ times as wide as an eye (41 : 16) ; frons extending anteriorly beyond level of antennal sclerites by a length equal to about half dorsal length of an eye (9 : 21) (Text-fig. 212). Relative lengths of antennal segments, 136 : 232 : 165 : (IV lost) ; segment I and basal one-quarter to one-third of segment II with only long hairs, the rest of antennae in

addition with short, shiny white, sub-erect hairs, on segment III (and probably also on IV) more dense than the long erect hairs; segment I near base about as thick as segment II and half as thick as at the clavate apex, almost apical half clavate (Text-fig. 210). Pronotum across humeral angles nearly $1\frac{1}{2}$ times as broad as long in the middle (113 : 91), and about $2\frac{3}{8}$ times as broad as anterior margin (113 : 43); calli only a little swollen. Cubital vein beyond apex of membranal cell more than half as long as cuneus beyond apex of embolium (43 : 78). Length of body 9.35 mm., width across humeral angles 2.05 mm.

Colour. General colour black. Head (excluding vertex, frons, and anteclypeus), pronotum, scutellum, pro- and mesothoracic venter, fore and middle coxae, and



FIGS. 212 and 213. Dorsal view of head in *Rayieria*. 212, *R. basifer* (Walker); 213, *R. braconoides* (Walker).

bases of fore femora narrowly, bright red; neck red; antennal sclerites and base of segment I narrowly testaceous. Corium (excluding embolium) with a large white spot near middle; membrane infumate, vein reddish-brown. Abdominal segments with white margins; one or two segments near base wholly white.

MALE. Unknown.

MATERIAL EXAMINED. AUSTRALIA: 2 ♀ (including holotype). Central Australia, Hermannsburg, 1 ♀, 1911 (H. J. Hillier). SE. Queensland, Tambaourine Mts., 1 ♀, 19-26.iv.1935; 1 ♀, 11-17.v.1935 (R. E. Turner). All in B.M.

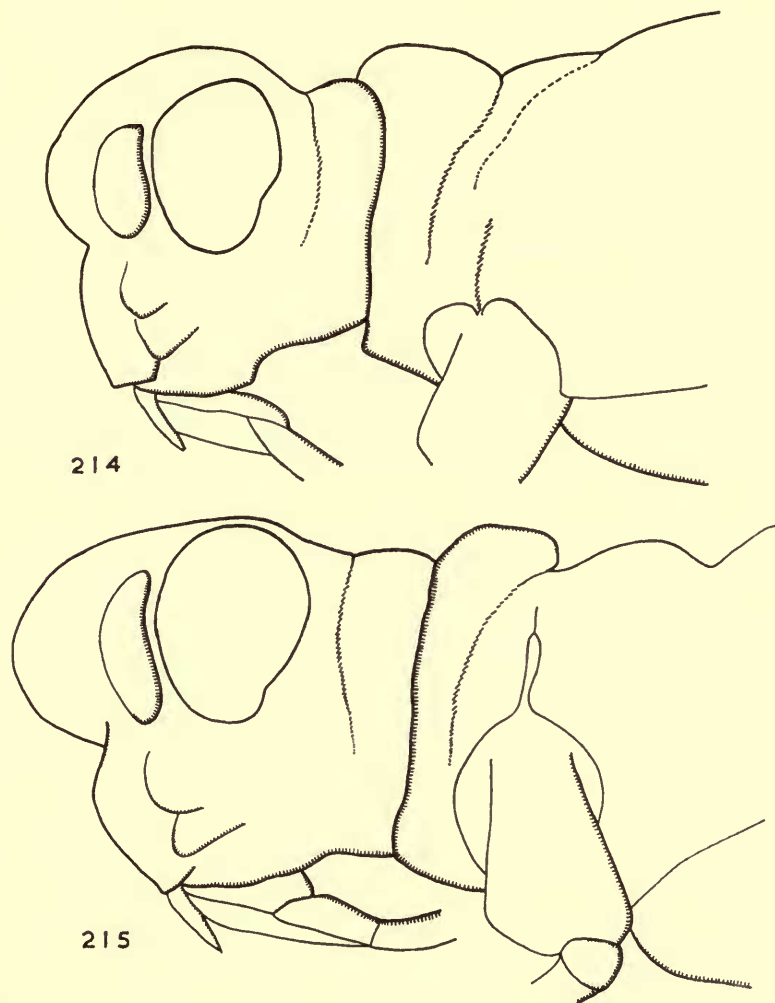
***Rayieria braconoides* (Walker) comb. n.**

(Text-figs. 211, 213 and 215)

1873. *Eucrocoris braconoides* Walker, *Cat. Hem. Het.* 6 : 164.

FEMALE. Structure. Head $1\frac{1}{4}$ times as broad as long (80 : 64), and two-thirds as broad as pronotum across humeral angles (80 : 118); vertex $2\frac{1}{2}$ times as wide as an

eye (45 : 18) ; frons extending beyond level of antennal sclerites by a length equal to three-quarters dorsal length of an eye (18 : 25) (Text-fig. 213). Relative lengths of antennal segments, 130 : 228 : (III and IV missing) ; segment I and basal half of



FIGS. 214 and 215. *Rayieria*—head and pronotum in profile. 214, *R. basifer* (Walker) ; 215, *R. braconoides* (Walker).

segment II with only long erect hairs, apical half of segment II in addition with a moderately dense covering of short, shiny white, sub-erect hairs ; segment I gradually thickened towards apex, and here only $1\frac{1}{2}$ times as thick as near base (Text-fig. 211), segment II distinctly thinner than segment I. Pronotum across humeral angles $1\frac{1}{3}$ times as broad as long in the middle (118 : 89), and $2\frac{1}{3}$ times as broad as

anterior margin (118:51); calli prominent, convex. Cubital vein beyond apex of membranal cell about half as long as cuneus beyond apex of embolium (44:85). Length of body 10.35 mm., width across humeral angles 2.12 mm.

Colour. Head testaceous; a streak along inner margin of eyes dorsally, and anteclypeus wholly, black; an obscure short streak on middle of vertex fuscous. Pronotum testaceous, posterior lobe (except for posterior margin narrowly and a lateral band on either side) black. Scutellum black, a longitudinal streak in the middle testaceous. Hemelytra dark brown to fuscous; clavus towards apex, and embolium, yellowish-brown; basal half of corium bright red; membranal vein dark red. Legs black; fore coxae wholly and apex of mesocoxae testaceous. Venter black; metaepimeron, margins of abdominal segments broadly, third and fourth visible abdominal segments wholly, and last segment largely, white.

MALE. Unknown.

MATERIAL EXAMINED. WEST AUSTRALIA: 1 ♀. Holotype. In B.M.

This species may be characterized by the much longer frontal prominence, the thicker antennal segment I showing no particular club-like thickening at apex as in *R. basifer*, the swollen and convex pronotal calli, and by the colour, especially the reddish head, the extensive black area on the posterior lobe of the pronotum, the absence of a white spot on the corium, and the black thoracic venter.

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